

THE IRON AGE

THURSDAY, AUGUST 18, 1892.

The Turner Rotary Motor, Pump and Meter.

Several new features are embodied in the device of which several engravings are here presented, and which is the invention of T. G. Turner, and is manufactured by the Turner Machine Company of 35 West Fourteenth street, New York. The principal characteristic of the machine is to be found in the fact that the two diametrically placed blades which constitute

case, have depended upon springs for the pressure, or the medium operating the motor, to force them out through the carrying hub, in order to present perfect contact. It may, perhaps, be well to mention what this machine has done so far, before entering into a detailed description of its construction. Fig. 1 represents one of the machines arranged as a pump, the supply being furnished by and returned to the barrel shown. The interior dimension of the casing is 14 inches and the drum 12

Running as a vacuum pump no difficulty has been experienced in maintaining the gauge at the 29-inch mark. This, perhaps, demonstrates more conclusively than any other application the closeness of the fit between the fans and the casing. This vacuum can be maintained at a normal speed and is more dependent upon the close fit referred to than upon a high speed of revolution. Running as a blower, a pressure of 200 pounds of air has been obtained with a machine $4\frac{1}{2}$ inches in

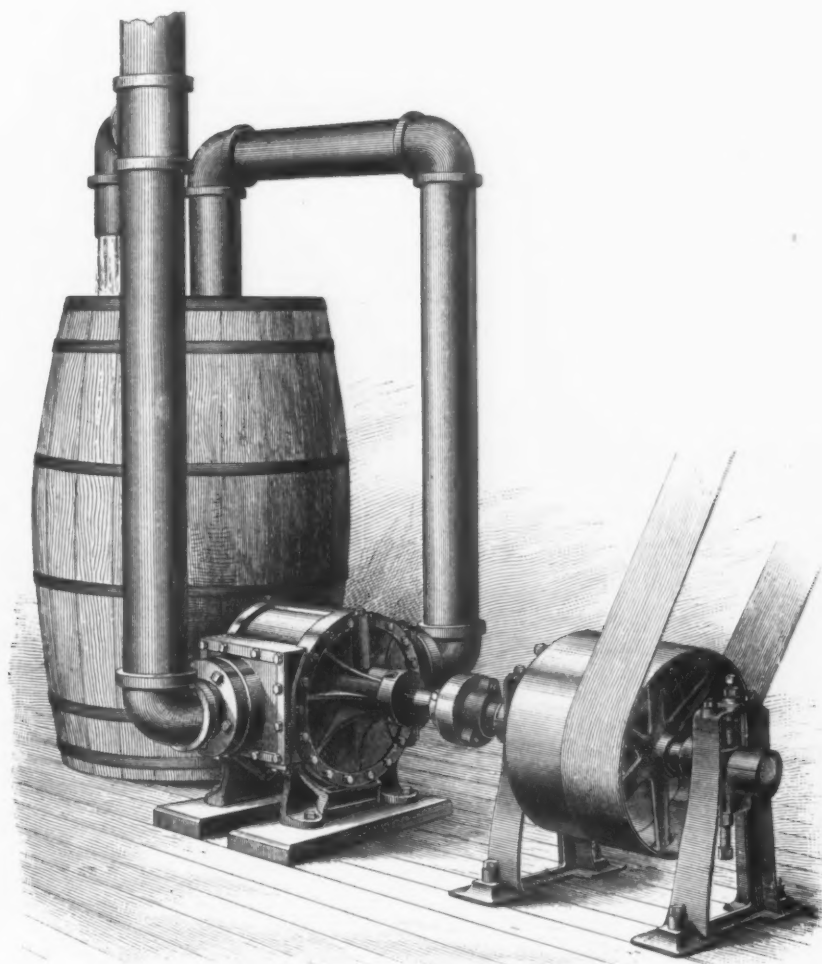


Fig. 1.

THE TURNER ROTARY MOTOR ARRANGED AS A PUMP

the four working fans of the motor are made in solid pieces, and neither their length nor their width is altered during operation. Further than this, the hub or true cylinder carrying these blades is mounted eccentrically in relation to the casing in which the blades operate. Nevertheless, at each point of the casing all the ends and sides of the fans are in contact with the surface of the casing. It will now be evident that this casing is not a true circle struck from one center, neither is it an ellipse or an oval. The method of scribing this circle will be mentioned in the proper place.

Rotary motors, blowers and pumps have for a long time been built with an inner hub mounted eccentrically as regards an inclosing circular case, but the blades, in order that they might form close contact with the circular and side portions of the

inches, and width of drum also 12 inches. Since the drum touches the casing at one point this gives a maximum exposure of each fan at each stroke of an area 2×12 inches. The inlet and delivery pipes are each 5 inches inside dimension, and the machine was arranged to be driven by the belt shown, at a speed of 150 turns per minute. The main idea in showing this is to clearly bring out the fact that a pump weighing only 600 pounds, and running at the rate given, had ample power to completely fill a delivery pipe 5 inches in diameter. A gauge placed on the delivery pipe showed that without contracting the nozzle the pump could be worked to the equivalent of a 50-foot head. The driving pulleys were 24 inches diameter by 6 inches face. The floor space occupied by the pump proper is 24×32 inches, and the height over all 20 inches.

diameter by 2 inches between the heads running 400 revolutions per minute.

Its Construction.

Fig. 2 is a section at right angles to the shaft carrying the inner hub, while Fig. 3 shows the method of scribing the casing. Fig. 2 is not presented as showing with great exactitude the construction followed in actual practice, but is intended to show accurately the principles underlying this construction and will serve all necessary purposes. The inlet and outlet, whether the machine be run as a pump or motor, are placed at diametrically opposite points in the casing. The hub is so mounted that it bears against the casing at the upper part, and in the machine having a diameter of casing of 14 inches the center of the hub is 1 inch to one side of the center of the casing, this

giving a width of fan of 2 inches. The fans are operative during one-quarter of a revolution, a recess being cut from the main opening down each side to the point marking the ends of the lower quarter of the casing. An extended series of experiments showed that with this arrangement the machine could be worked as a water motor or pump without any shake or jar and without the necessity of an air chamber. Making the effective working space less than a quadrant means the loss of so much stroke, as we might say, while making it more than a quadrant lessened the effect by reason of the medium operating, or being operated upon, choking in the recess formed by the fans between the two main openings leading into and out of the casing. We may add that no provision whatever is made for packing either the ends or sides of the blades beyond the insertion of a strip of fiber gasket impregnated with graphite, but simple provision has been made in order that the length of the blades may be increased in order to compensate for wear when it occurs.

Referring now to Fig. 3: In laying out the curve of the casing the perfect circle A G (dotted line) B and I is first struck from the center D. Then a rule having the exact length of the diameter A B is mounted so as to move longitudinally on the center C, which is to become the center of the working drum. Then one end of this rule being always kept in

is but $\frac{1}{4}$ inch. It should be noted that at the meeting points A B of the two curves there is no abrupt or sudden departure from one curve into the other. The change takes place gradually and is so slight as to produce no difficulty whatever in running the machine at what would at first seem to be an excessive velocity. In the 14-inch machine, during the quarter stroke at which the blade projecting from the hub is under greatest pressure and when it would be supposed that it would bind

of liquid from the lower portion of a cylinder and to deliver into the upper portion of the same cylinder. In this cylinder is a piston held in a certain position by the spring indicated, and the upper end of whose rod is connected to the throttling valve, as shown. Through the piston are openings which are so gauged that when the propeller shaft travels at a certain speed the amount of fluid delivered by the motor will pass through the piston without moving it against the tension of the spring. Should the shaft begin to race the motor would travel quicker, the tendency being to take from the under side of the piston and deliver to the upper side more liquid than normal, thereby having a tendency to pull down the piston rod and act to close the steam valve.

The device we have described has been used as a motor propelled by liquid and gas, as a vacuum, air and liquid pump and as a water meter, for which purpose it is peculiarly well adapted because of the exceedingly small amount of friction in its parts in contact with each other.

A Boom in Shipbuilding.

A Detroit press dispatch says that the boom in lake shipbuilding, which was never at higher tide than at the present time, has extended to the lake and rail lines. The New York Central (Western

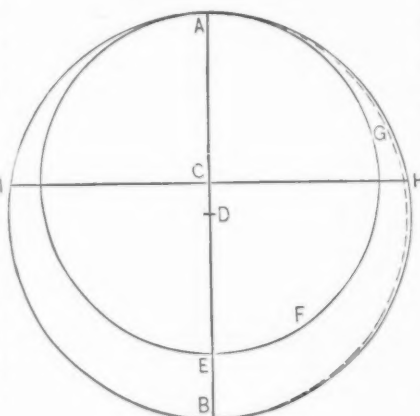


Fig. 3.—Development of Curve of Cylinder.

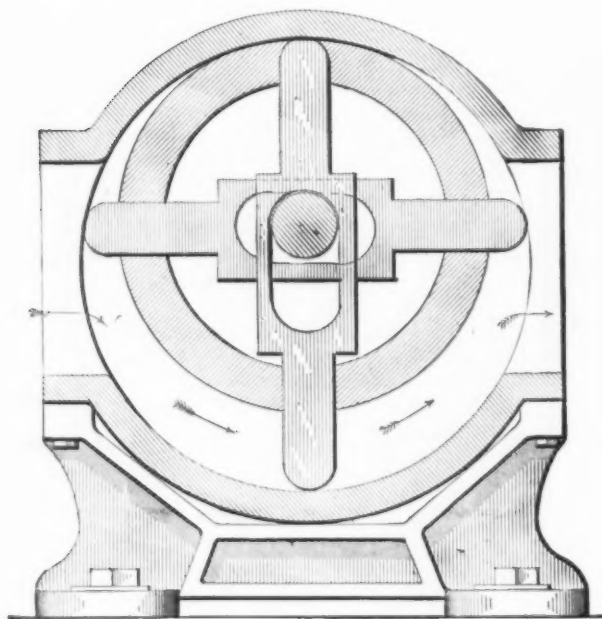


Fig. 2.—Section through Cylinder and Drum.

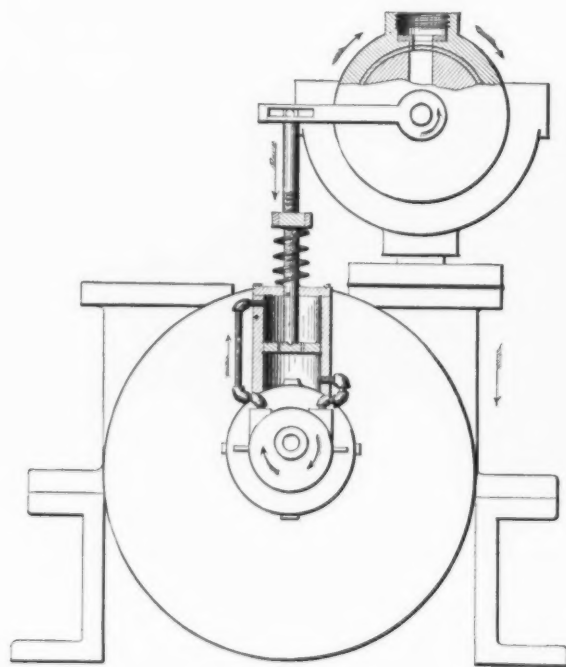


Fig. 4.—Motor Arranged as a Steam Governor.

POSITIVE SPRINGLESS ROTARY MOTOR, PUMP AND METER.

contact with a half of the true circle represented by A I B, and moved along this semicircle, the other point of the rule will describe the other half of the casing represented by the full line A H B. It will thus be seen that the same diameter revolved about and moving freely (longitudinally) on the point C will be in contact at both its ends on all points of the new curve A H B I. It will be further observed that although in the drawing we present the distance between the centers C and D as $\frac{3}{8}$ inch, the maximum distance between the curves G and H is less than $\frac{3}{8}$ inch. In other words, to give this a practical application in a 14-inch machine where the hub center is 1 inch from the center of the casing, the difference between the true circle of the casing and its operating curve

in the guides formed in the hub and along which it is adapted to slide, and that excessive friction would be set up which would materially interfere with the economical operation of the machine either as a motor or pump; but by reference to Fig. 2 and by the statement that in a 14-inch machine the total distance moved by the blade during its working travel is but the $\frac{1}{4}$ part of an inch to and fro, the blade is compelled to travel but a very slight distance longitudinally, and this distance being at such a large angle to the blade itself, the matter of friction is of but little moment.

Fig. 4 shows the machine arranged as a marine governor, controlling the throttle valve. The motor shown in the center at the bottom is driven from the propeller shaft, and is arranged to receive its supply

Transit) Railroad Line has closed a contract with the Detroit Dry Dock Company for a steel merchandise boat on the same general lines as the Hudson and Harlem, with the exception that she will be about 2 feet longer and 6 inches wider. The contract price for the new steamer is about \$222,000. She will be completed at the opening of navigation next spring. The Union Line is quite certain to build two large steel steamers at Buffalo in the coming winter. Two immense passenger boats superior to anything now on the great lakes will be built at the Detroit Dry Dock Company's yard the coming winter. They are for the Detroit & Cleveland Steam Navigation Company, and will go on the route between Detroit and Mackinac Island. The City of Mackinac and the City of Alpena, the two steamers which

have been on that run for a number of years, have been sold to a Cleveland syndicate. Next spring they will form a line between Cleveland and Buffalo. The price paid for the two boats is reported to be \$275,000.

The Hatch Drop Hammer.

W. H. Robertson of 65 South Canal street, Chicago, general sales agent of the Hatch Hammer Company, is introducing an improved drop forging hammer, illustrated in the accompanying engraving.

The drop is raised by two involute cams, keyed to a heavy shaft passing through the anvil and running in large brass boxes.

These cams work against rolls turning on the end of brackets attached to the

stand "side blows" and will not cut or nick and soon break the guides, as is the case with the V-shape in general use.

The guides are heavy and have the usual side adjustment at base and a binding rod at the top, and have greater distance between than usual for die space and bulky work.

The anvil is made extra heavy and is cored out for the driving shaft and brass boxes.

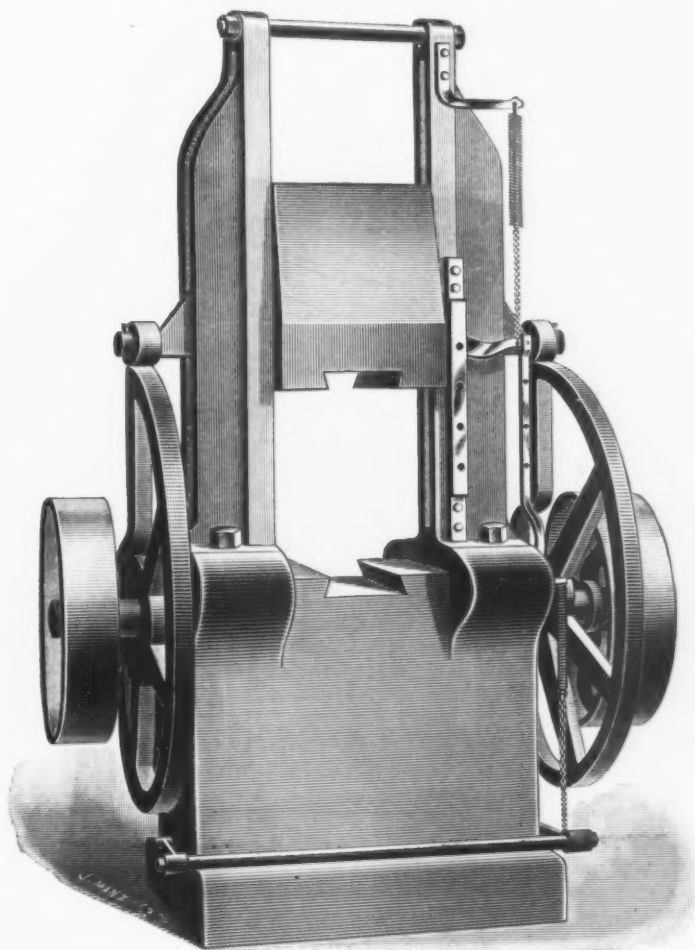
It is claimed that this hammer is very economical on power, and that two 4-inch single belts will perform the work on this hammer. It is made in sizes from 100 to 2000 pounds weight of drop.

The nautical world was startled by the announcement that the single-screw Cunard steamship Umbria, which arrived

bell and Allen W. Thurman of Ohio, Robert J. Dean and William Allan of New York, W. W. Borden and Frank Barrett of St. Paul, together with other capitalists. The purpose of the projectors of the company is reported to be to acquire control of iron ore properties in Michigan, Wisconsin and Minnesota now owned by several corporations. The principal office of the company will be in Chicago—with branches at St. Paul, Duluth and New York.

How Declining Silver Affects Trade.

The way the fall in silver may, and undoubtedly does now, hurt us is indirectly, in the adverse effect it has on the trade of our largest customer, England. A financial writer says: We sell the bulk of our immense cotton crop to the manufacturers of the North of England, who sell the finished fabrics to India. The trade of India has been seriously disturbed by the fall in silver, and its ability to buy has been greatly curtailed. Diminish the power of your customer to buy, and you must either sell him less goods or the same amount at a diminished price. In practice, trade generally adjusts itself by dividing the two, part of the loss being on the bulk and part on the price. The English manufacturer, having this loss on the marketing of his products, cannot take as much raw cotton from us as he did before, or must take it at a less price. So the cotton planter here is adversely affected. Nor is he alone in this. The manufacturing population of the North of England are immense consumers of our food products. Their wages and their hours of work have been reduced, and consequently their ability to buy those food products. Here is one of the principal causes of the low price of wheat. Our surplus wheat is marketed at Liverpool, and the price of the surplus is the price for the whole crop. So not only the Southern planter, but the Northern farmer, is hurt. Though our cotton exports in July were larger than in the same month last year, we may imagine that exports during the last half of the year will show a falling off, because there are so few exchange bills being made against future shipments. Three of the largest cotton houses report that they have drawn bills against cotton shipments for October, November and December to the extent of only 10 per cent. of the amount they had drawn at this time last year. This may help us to understand why it is that commercial bills are so scarce in the market that gold is still dribbling out.



THE HATCH DROP HAMMER.

drop and extending through the uprights. The cams run continuously and are covered by cast-iron shields not shown in the engraving.

Placing the foot on the treadle releases the dog holding the drop, and by holding down the treadle the drop continues to rise and fall. By releasing the foot it gives a single blow.

When run on short stroke 200 blows per minute can be struck, which makes it desirable for welding thin steel and for other work requiring a quick blow. The stroke is varied by various devices furnished by the makers from 6 to 36 inches.

It will be readily understood that the rotary motion of the cams gives a uniform, positive and quick lift, without jerk or strain on the uprights.

The drop has square bearings in the uprights and on the sides, with sufficient surface at top and bottom to insure accurate working and without too much friction. It is claimed that this form will

here early Saturday morning, had made the run from Queenstown in less than six days. She now stands peerless among the single-screw speeders. Her time was 5 days 22 hours and 7 minutes. She covered 2780 knots, at an hourly average of 19.56 knots. Her daily runs were: 461, 502, 500, 427, 502, and 388 knots. No other single-screw steamship has made 500 knots a day or more on three days of her voyage, and only a few of the twin-screw fleet have done as well. To "break the record" appears to be one grand object this season among the ocean liners. The City of Paris, Teutonic and Umbria have each made wonderful trips.

A mining company of pretentious proportions has secured articles of incorporation in Illinois. It will be known as the Itasca Iron Company of Chicago, and its authorized capital stock is \$5,000,000. Among the persons interested are understood to be ex-Governor James E. Camp-

The Pacific Mail Company's new steamer Peru, just completed in California, on her trial trip, 3d inst., maintained a speed of 14.96 knots per hour, at least equaling that of her consort lately built on the Delaware.

Pedro G. Salom is an earnest champion of the storage battery system of street railway propulsion. In a lecture delivered before the Franklin Institute in June Mr. Salom, who is widely known in the iron trade, accounts for the delay in introducing storage batteries by the intense patent litigation on the subject during the last five years. He cites a record at the Citizens' Passenger Railway in Indianapolis showing that a single set of 108 accumulators made over 6000 car miles. On the basis of this achievement he places the cost at 3.85 cents per car mile. He urges that there are no insurmountable difficulties connected with the storage system beyond the fact that it costs a few cents more per car mile than the trolley, and holds that the demand for its introduction will be irresistible when the disadvantages to the public of the trolley system are taken into account.

SEABURY'S BREECH MECHANISM FOR RAPID-FIRE ARTILLERY.

Some ten years ago ordnance experts in France, Germany and elsewhere on the Continent were impressed with the necessity for an increase in the caliber of rapid-fire artillery in order that projectiles of sufficient power to penetrate the sides of the newer types of torpedo boats might be discharged in a continuous stream at those swiftly moving vessels. In order to carry out this idea they advertised for a 3-pounder gun that was to have projectile

yond this, and an attempt was at that time made to adapt the rapid-fire system to 6-inch guns and others capable of attacking armored structures.

This ambitious idea received a serious check, however, when the weight of the ammunition became too great for successful manipulation without the aid of mechanical devices. Just so soon as the projectile and powder must each be in a separate package the time element is seriously attacked, as the number of motions required to load are doubled, and the few additional seconds lost are just sufficient to take from the system its great essential of rapidity.

ing the power of the charge while diminishing its weight. What remains to be done, therefore, is to modify the mechanism about the breech so that there will be greater simplicity of parts with lessening of weight, while the strength is increased and the guarantee of safety from accident is assured.

It is beyond question that the condition of combat between ships and forts is definitely changed by the advent of these guns. Even armored vessels with covered batteries are at a disadvantage, as a hail of missiles will seek the gun ports and conning towers wherever an enemy, from the nature of circumstances, takes close



Fig. 1.—Seabury 6-Pounder R.-F. Gun

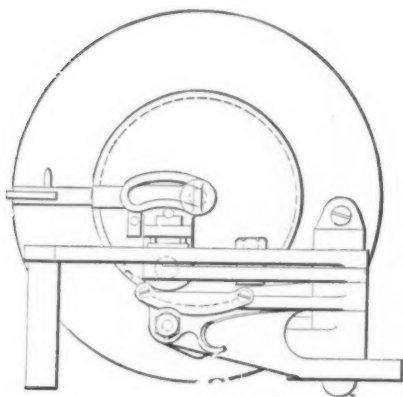


Fig. 2.—End Elevation.

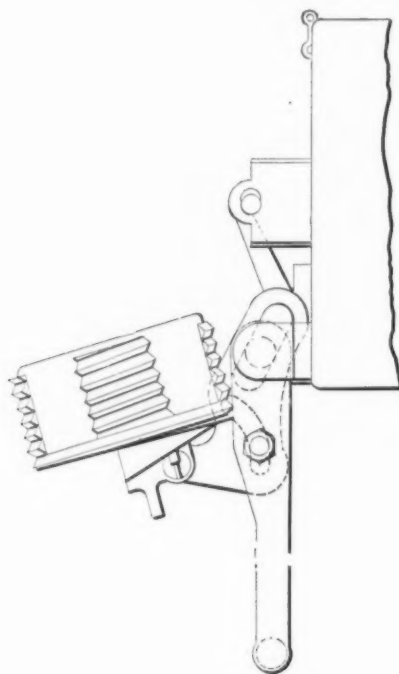


Fig. 4.—Side Elevation.

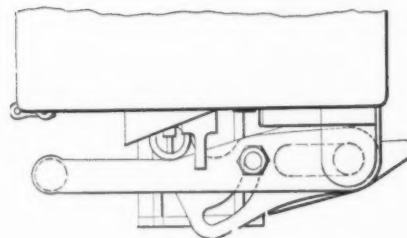


Fig. 3.—Plan.

THE SEABURY BREECH MECHANISM FOR RAPID-FIRING GUNS.

and powder charge formed in a single cartridge and that would require but three men to load, train and fire. It was also to be able to fire 12 aimed shots per minute, particular stress being placed on the matter of aimed shots, the capacity of the gun for actual rapidity of fire being considerably in excess of that rate.

The outcome of these efforts were the Nordenfeldt and the Hotchkiss types, one or the other of which may be found in vessels belonging to nearly every one of the great European powers, Germany with her Krupp system being the most prominent exception.

For some time it was considered that a projectile weighing 6 pounds had sufficient power to pierce the hulls of the torpedo boats, and for two or three years that limit was not exceeded. It was not very long, however, before gunmakers and breech-mechanism inventors aspired be-

For our own navy we are making guns of 4-inch caliber, which are powerful enough to pierce the sides of an unarmored cruiser, and which can be fired almost 20 times per minute. Experiments abroad with guns of a little less than 5-inch caliber show that a target 6 feet square can be hit five times in 31 seconds with a 45-pound shot, which when it leaves the muzzle of the gun travels at the rate of 2356 feet per second, and goes with force enough to penetrate 10½ inches of wrought iron.

The great advantage of the rapid-fire system is due solely to details of breech mechanism and ammunition. We are fortunate in this country in possessing the requisite plant for making metallic ammunition, which in its finish and general make up places us easily ahead of the rest of the world. Smokeless powders will soon contribute their share toward increas-

quarters. Experiment has also demonstrated that the extreme length of the guns forming the main battery of a war ship offers a most excellent target for the projectiles of the rapid fire guns.

This system, which is now so important an adjunct to the armament of a fighting ship, is generally spoken of as the vessel's secondary battery. The first order received for a weapon of this kind came from the United States, and the guns now mounted aboard the cruisers Chicago, Boston, Atlanta and Dolphin were delivered under it. Three calibers were obtained, the 6, 3 and 1 pounder, as they are known in the United States, their usual names in countries using the metric system being the 57, 47 and 37 mm. gun.

The growth of the rapid-fire gun has been remarkable, and we find it has become almost the universal practice to reduce the caliber of the guns in the primary battery

of the vessels, while the secondary batteries are rapidly increasing. Smaller guns against unarmored cruisers do their work equally well, if not better, for the greater intensity of fire secured by the certain action of a large number of easily handled small-caliber guns is surely more valuable than any probable advantage which might be derived from heavier projectiles fired under conditions that make their effectiveness doubtful.

The qualities of these guns will be fully brought into play when there is no delay between fires beyond that actually necessary for aiming. The degree of rapidity of fire possible with this system is now sufficiently great to satisfy the most exacting artillerist, but this rapidity can only be obtained when the supply of ammunition is rapid and continuous, and the propellant used does not give off sufficient smoke to obscure the target. These two factors are absolutely essential to a maximum rapidity of fire.

In the armor-piercing caliber of rapid-fire guns in use abroad, such as the Canet and Armstrong, the high velocities obtained with smokeless powder charges give such flat trajectories that point-blank aiming is possible up to very long ranges, a decided advantage in opposing torpedo-boat attacks, as the more direct and more

mechanism Lieutenant Seabury followed the same idea.

The slotted screw, as the breech-closing block is called which has alternate lands and grooves, three or four of each, admits of a greater length of bore to the gun than do any of the systems which have a hole cut through the side of the breech for the insertion of breech wedge. This is a very decided advantage, as it admits of greater power being obtained, besides which the mechanical work of cutting the screw box from the rear is simpler than cutting through the sides, and the gun, in consequence, is much less weakened. The idea of the inventor is to shorten as much as possible the time necessary to remove this breech block from its seat in the gun, to admit of the insertion of the projectile and powder both in the one inclosure like ammunition for a shoulder rifle, to close it after the ammunition is in, to lock it and fire without running any risks from premature explosions. All of this with due regard for both lightness and strength of the parts.

In such a gun there have heretofore been three movements necessary to open the breech, namely: 1, turning of the breech block to a position in which it can be withdrawn directly to the rear; 2, its withdrawal until it is entirely outside the

The latter is accomplished in this way: The cartridge-shell extractor consists of a slide, which works back and forth in a guide in one side of the cavity which receives the breech block. The extractor is provided with a flange which engages with a corresponding flange on the front of the breech block for the purpose of starting the cartridge shell by the slight backward movement given to the block by unscrewing it, the flange of the block being slightly cut away to allow it to escape from the extractor flange as the unscrewing of the block is completed, and to permit the block to move back without taking the extractor with it.

The curved slot in which the lever works is so designed that the lever operates most effectively to turn the breech block in beginning to unscrew it and in completing the operation of closing it up. Moreover, in firing the gun there is a tendency to turn the breech block. This tendency is resisted normally by the lever, which serves as an abutment. In this resistance the lever is sustained in part by the long support which is provided for it on the fulcrum pin, and in part by engaging with the breech in a notch provided in the latter to receive it.

The continued movement of the lever withdraws the breech block from the gun.

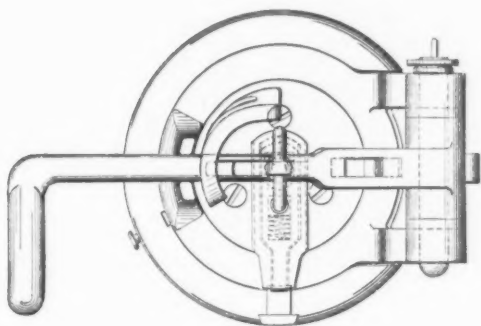


Fig. 5.—End Elevation.

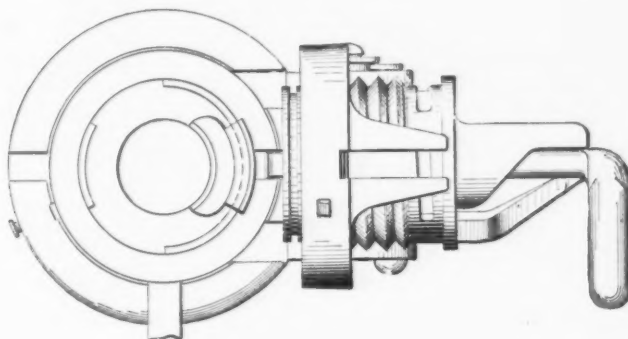


Fig. 6.—Side Elevation.

THE SEABURY BREECH MECHANISM FOR RAPID-FIRING GUNS.

rapid the gun fire the greater the possibility of hitting.

The increasing demand for guns of the quick-fire type and the declared intention of Congress to have every feature and portion of the equipment of the new naval vessels of domestic manufacture, have induced ordnance experts and inventors in this country to look carefully and critically into the matter with a view of improving upon existing types. The result has been that they have evolved mechanism that is more practical and that can be more quickly worked than any in use abroad.

One of the newest types is that invented by Lieut. Samuel Seabury of the United States Navy, and it is considered to answer most satisfactorily the requirements of combining simplicity and lightness with safety and rapidity. It is on the interrupted screw principle and can be applied to any gun the breech plug of which is operated by manual power. A great deal of time is saved by this system in opening and closing the breech block, as but a single movement of a lever arm is necessary.

The great advocate of the wedge system for closing the breech of guns has been Krupp, whose gun system is in use in Germany, and who has supplied various other countries with weapons of his make. When converting some of our army guns from muzzle loaders to breech loaders this same general system was adopted; but the navy preferred the French slotted-screw method; and in designing his

breech face of the gun and resting upon a carrier or tray, which is hinged to one side of the breech, and, 3, the swinging aside of the carrier with the block in it until there is space sufficient for the insertion of the ammunition. All three of which movements must be reversed in order to close the breech.

It has been the principal object of the inventor to accomplish this opening and closing in a more simple manner than has ever before been done. He has succeeded in effecting all of these movements in proper succession by the continuous action of a single lever, which lever is employed to effect the cocking of the firing pin used for the ignition of the charge and the operation of the cartridge shell extractor in guns using fixed ammunition.

In the smaller gun the operations are generally the same, being as follows:

If we suppose the gun to have been fired and that the breech block is still closed, all that has to be done for performing the several operations is to pull back the lever, the handle of which is just clear of the left side of the breech of the gun. During the first part of the rearward movement of this lever it works the plug around to the left until its threads and those of the screw box are clear of each other, and the plug is in a position for withdrawal. At the same time it draws back the firing pin to the position to be caught by the gear, the unscrewing of the block at the same time starting the cartridge shell.

Just before this withdrawal is completed the wedge-like portion of the block acts upon a lever which draws in a latch bolt and unlocks the carrier in which the breech block rests, and allows it and the block to swing around to the right until the base of the old cartridge shell in the gun is clearly exposed.

The still further movement of the lever works the extractor lever, pulls back the extractor, and with it the empty cartridge shell. It must be clearly understood that the movement of the lever is not intermittent between the several operations above described, but is continuous. The cartridge shell having been removed and a new charge having been inserted into the chamber of the gun, the lever is returned to the locking position.

During the first part of this return movement a spring* works against the extractor and returns it to its seat, and as by the continued movement of the lever the carrier passes into the cavity of the breech, it works the latch bolt until it liberates the breech block and allows it to move forward, while the latch bolt springs into the notch that is cut for it in the breech and so locks the carrier.

The arrangement is such that the firing cannot take place until the lever has entered a notch in the breech and the block has been securely locked, for should the firing pin be accidentally let off while

*This spring is only required to carry the extractor plate sufficiently toward its seat to clear the carrier ring on its return.

the lever is not locked, the crosshead of the pin would strike the lever and the pin would be arrested with its point short of the cartridge priming.

There is only one other system existing for handling the breech blocks of the larger calibered rapid-fire guns in one motion—that of Canet in France. Even in this method, however, there does not exist the simplicity that is found in the Seabury system, for strictly speaking there is a combination of three separate motions, as the Canet lever works upon three distinct centers in opening or closing.

In the Seabury extractor there is also a great advantage over other rapid-fire systems, the sliding plate being far more reliable in its action than the spring locks at the sides of the cartridge cases. The rapid rearward motion given by the action of the mechanism in opening against the short arm of the extractor lever serves to throw the cartridge to the rear as effectively as in the smaller calibered guns of rapid-firing guns.

One of the most objectionable features of rapid fire mechanism is the larger number of parts of which it is usually composed. These add greatly to the expense and to the difficulties of manufacture. It has been the aim of the inventor of the Seabury mechanism to make a reduction in the number of parts wherever possible, until he has now succeeded in reducing the number below that of any other system, while at the same time he has greatly lessened the time required in their manipulation and has so distributed the power as to best meet resistance whenever required.

The lever swing is less than 180° in opening and closing, and, as has been said, there is absolutely but one motion, and that in as small a compass as is possible. The lever and the slotted cam plate are absolutely the only working parts required to operate the block.

The chief point in which the two systems differ is found in the means of communicating the power of the lever to the motions of the block. The smaller system we have already described; in the larger it has been found necessary to introduce an additional piece to secure the strength and ease of manipulation within a small compass. This additional piece consists of what is technically known as a slotted cam piece. This piece has two slots, one of the slots is for the reception of the main pivot to which the lever is rigidly attached, while the other receives a steel guiding pin which is also rigidly attached to the lever and serves to convert the curvilinear movement of the lever into the combination movement required for opening and closing the breech lock. The coupling connection between this cam piece and the breech block is made to serve as a means for cocking the firing pin. It also prevents the firing pin from accidentally reaching the priming and cartridge until after the block has been locked.

This mechanism has a triple security against accidental firing: 1. In the means above referred to. 2. Because the trigger does not come in contact with the seat until the block is fully locked, the trigger being on the body of the gun and the sear slotted in the rear surface of the block. 3. Because of a safety latch which engages the sear to lock immediately after the latter has made its connection with the firing pin after cocking and is only removed from the safety position when the block is locked by an independent part of the mechanism.

The heavier calibered guns may be supplied either with the carrier rig, similar to that for the smaller guns already described, or may have the block borne to one side by a tray hinged to the breech. As a rule this confining the entire motion of opening and closing the breech lock to one pivot has been a distinguishing feature of this mechanism. In this last improvement for

guns of larger caliber, the angular movement of the lever has been reduced to less than 180° , working entirely on a single pivot.

Probably the most important feature of this mechanism is that it requires no lever-locking device whatever, the reason being that when the mechanism is closed, its two operating pins (the main pivot and the working pin in the cam) are in line, hence there is no tendency to rotation.

Not only is there a smaller total number of pieces in the make up of this mechanism than is found in that of other systems, but the parts employed occupy less space both within and without the breech inclosure, and there are fewer of them outside the breech when the block is closed than in any other system.

In previous forms of the Seabury mechanism the ordinary well-known tray latch for holding the breech block in its position on the tray, when the breech of the gun was open, was adhered to, but experience has proved that this method was not sufficiently to be relied upon to hold the block during rapid handling. The improved form of latch embodied in the most recent design provides a resisting surface at right angles to the motion of the breech block when about to be pushed into its seat in the gun, and this resistance is only done away with at the proper instant for the block to pass over. In almost all the mechanism for rapid-fire guns the application has been largely restricted to the smaller calibered guns, but, as has been said, the Seabury system contemplates covering a larger field, and one of its great points of usefulness is found in the methods employed for obtaining more rapid and satisfactory work with the large-calibered guns.

This mechanism offers a wide scope for application to field guns which do not necessarily use fixed ammunition. In fitting the Seabury system to this class of artillery it simply requires the fitting of a cam piece to the breech block as it exists, with no change of gas check. The same carrier ring and its connections with the gun would also be available, the only other addition being a lever so pivoted on the carrier ring as to operate the cam piece to open or close.

In the larger of the two systems presented the breech block is operated both to lock and unlock, to enter and to withdraw, by the single curvilinear movement of a horizontal lever, which transmits its power, through a pin rigidly secured to it, to a cam piece, which is in turn coupled to the block.

This cam piece is constrained to move across the face of breech to lock or unlock by its coupling to the breech block at one end and by a slot through which the lever pivot passes at the other end.

In entering or withdrawing the block the cam piece is acted upon by the same pin on the lever which serves to lock or unlock.

The coupling piece securing the cam to the block is made to serve as a means for withdrawing the firing pin for cocking. The extractor plate, which is recessed in the gun below the lower blank in the screw box, is worked by a lever which receives its movement to the rear from a projection on the tray when swung aside after opening the breech.

Supposing the gun to have been discharged, to open the breech pull the lever around to the right about 180° . The first part of the movement (which is continuous, unbroken, and from the same pivot) unlocks the breech block and cocks the firing pin, at the same time moving the sear away from the trigger and causing a safety latch to engage the sear to lock it. The block in unlocking also starts the extractor plate to the rear.

The second part of the movement pulls the block back into the tray and unlatches

the latter from the gun. The third part swings the mechanism around to the right and rear to leave the bore clear for loading, and at the end of the movement pulls back the extractor plate to eject the empty cartridge case.

The Corning Steel Company.

The new sheet mills of the Corning Steel Company, now in course of erection at Hammond, Ind., are expected to be in operation early in September. The company are erecting a very fine plant. The principal building is 300 feet x 160 feet, with a boiler house 200 x 60 feet adjoining it at one side, which will also be used as a dynamo room, smith shop, &c. The main building is of peculiar construction. The walls are of heavy brick work, pierced with numerous doors on all sides, giving an excellent circulation of air in the summer. With the exception of a row of posts down each side, about 16 feet from the walls, the whole interior is free from all obstructions. The roof is broken by a line of vertical windows half way from the eaves to the ridge, and there is also a full deck extending the whole length of the top, which together light up the interior most effectively. The floor of the entire mill is elevated and is on a level with the floor of a freight car. Tracks extend along the sides of the building, giving excellent shipping facilities. There are no stationary cranes for changing rolls or doing other heavy work, but tracks have been laid through the mill wherever needed, with turntables at intervals, over which a locomotive crane with a 16-foot swing will run. These tracks will be covered with cast-iron plates when not in use, making a perfectly smooth mill floor.

Steam will be supplied by a 1500 horsepower Stirling boiler to the rolling mill engines, which are 30 x 60 inches, built by the Boss Foundry & Machine Works of Fort Wayne, Ind. The engines will operate light sheet mills and one three-high bar mill, built by the Lloyd Booth Company of Youngstown, Ohio. The capacity of the works is rated at 100 tons per day of sheets running from No. 30 gauge to $\frac{1}{8}$ inch thick, inclusive. The entire product will be steel, no provision being made for the manufacture of iron. The plans contemplate in due time the erection of two 20-ton open-hearth steel furnaces, but for the present the works will be operated on steel specially made for them by outside steel works.

The main office of the company is in rooms 418 to 420, Phenix Building, Chicago. Franklin T. Corning is president, Charles S. Corning secretary and treasurer and Ambrose Beard is superintendent. Mr. Beard was formerly connected with the Cambridge Iron & Steel Company of Cambridge, Ohio, and under his management the plant attained its great success in the manufacture of sheets. He is a son of George Beard of Gartcosh, near Glasgow, Scotland, a very successful sheet mill manager, whom many of our readers may remember as among the visitors to this country with the Iron and Steel Institute in 1890.

The illusory character of estimates and contracts in great engineering enterprises has seldom been more strikingly illustrated than in the case of the Manchester Ship Canal. The *London Times* says that when that undertaking was originally sanctioned by act of Parliament, just seven years ago, the cost of constructing the waterway and incidental works was computed to be £5,750,000, which with expenditures for other purposes brought up a total of nearly £8,500,000, and the latter calculation increases these figures to nearly or quite £14,000,000.

Ridgway Steam-Hydraulic Crane.

Within the past few years a style of crane which has met with much favor and become very popular is the Ridgway "steam-hydraulic." A large number are now in use in the principal iron and steel works, and consequently are more or less familiar to many of our readers.

The usual style of the Ridgway crane is that in which the lifting cylinder and the jib are hung from chains and balance each other about the pivot of the crane. This,

to the jib. Between these two plates is a nest of polished steel balls, as shown at M, Fig. 2. Upon these balls rests the whole load carried by the crane, and upon them the crane principally turns. No downward stress comes on the mast save that of its own dead weight. There is, however, a side pressure due to the overhang. These stresses are taken upon a larger nest of 3-inch balls, which are shown at B in Fig. 2. These balls turn in steel rings. The result of this arrangement is an easy turning crane, and the still further important ad-

filled with greasy waste, so that they are self-oiling and need oiling only once a year. The trolley wheels are furnished with steel anti-friction rollers without cages, and so move with ease and require no oiling.

From the bottom of the lifting cylinder L a 4-inch pipe is run to the bottom of another cylinder, W. This second cylinder is called the water cylinder and may be set anywhere either in or above ground, and any distance from the crane. When it is desired to operate a number of cranes from a common pulpit the water cylinders are grouped together and the pulpit is made on the flat tops of them.

To operate the crane, water is placed in the cylinder W to within 1 foot of the top. Above the water there will thus be a large body of air. On top of the cylinder is an ordinary plain D slide valve, which is attached to the steam supply. To lift the crane steam is admitted to the water cylinder and passes in on top of the air. The air, being twice as heavy as the steam, keeps its position next to the water, and being a good non conductor of heat, the condensation of the steam by the cold water is prevented, and the water at once

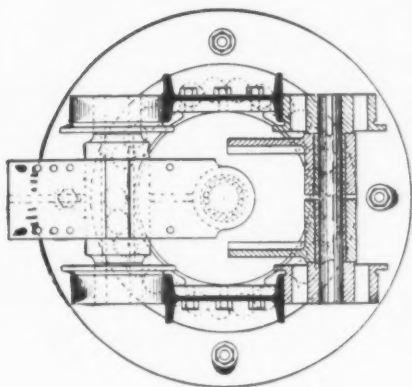


Fig. 3.

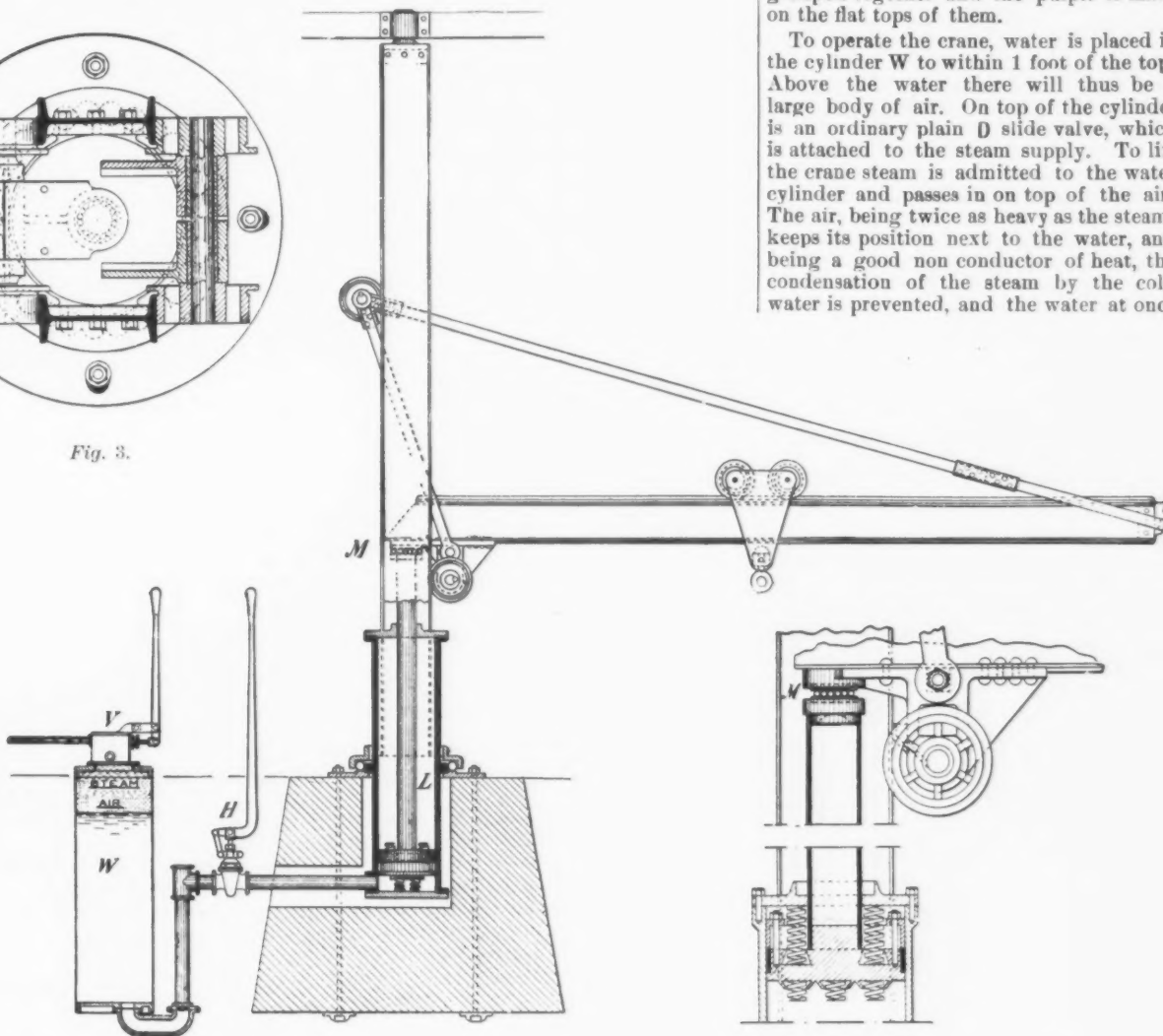


Fig. 1.—Section of Five-Ton Crane.

THE RIDGWAY STEAM-HYDRAULIC CRANE.

however, is by no means the only style of Ridgway cranes, as the "steam-hydraulic" principle of this firm is applied to all types of cranes and elevators.

We show in the accompanying cuts the steam-hydraulic as applied to the usual type of high-pressure hydraulic crane. The crane shown, while designed particularly for the steam-hydraulic system, is found to possess so many valuable features in construction that it is also used on high-pressure systems.

Fig 1 is a view, partly in section, of a 5-ton steam-hydraulic crane, and Figs. 2 and 3 are enlarged sectional views, showing some of the important details. L is the lifting cylinder, which is set in between the two beams of the mast and rests in a seat turned for it on the bed plate. This cylinder is supplied with a suitable piston and carries on the latter a rod, which is a piece of 6-inch ordinary rough pipe. Upon the upper end of this pipe is a casting, which holds a hardened steel plate. A similar plate is carried by a casting fastened

vantage is obtained of having these vital parts of a crane at all times under eye and at hand, so that the crane does not have to be taken to pieces to examine them.

In this crane a notable improvement has been made in the manner of mounting the wheels that travel on the mast. In most hydraulic cranes the axles are fixed and the wheels turn loosely on them. In a short time, when slightly worn, the wheels refuse to turn and go sliding up and down the mast with a great waste of power and rapid destruction of both wheels and mast. In this crane the wheels are firmly keyed to heavy steel shafts, and these turn in brass bushings, having oil chambers

takes the same pressure as the steam and flows to the lifting cylinder, where it forces up the piston and raises the load. To lower the crane the steam is exhausted, and the pressure being relieved, the water flows back to the water cylinder again. The same water is used over and over indefinitely. This is what has now become known as the Ridgway steam-hydraulic system, and its whole success depends upon the simple matter of interposing a body of air between the steam and water, the patent of W. H. Ridgway & Son, Coatesville, Pa.

As these cranes use the ordinary steam pressures of 60 to 100 pounds, the lifting

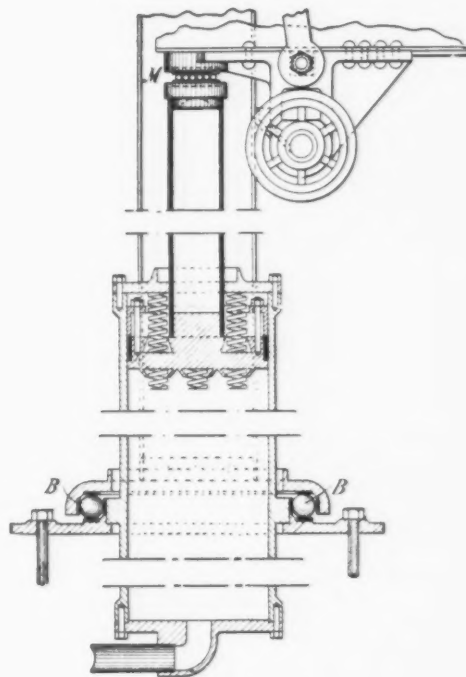


Fig. 2.

cylinders have to be larger in diameter as compared with hydraulic, and so a piston is found desirable rather than a ram. The piston is easily accessible for packing, and as the pressure is low, does not need packing oftener than once a year; which is in striking contrast to high-pressure hydraulic, which require packing once a week and oftener.

As compared with the ordinary hydraulic system the steam-hydraulic is said to possess many advantages. All pumps and accumulator are unnecessary, and their cost and maintenance is saved. There is no trouble in keeping up packings, and all the trouble with valves is saved. All danger of freezing is avoided even in the coldest places. They are smooth and easy in action, and free from all shocks and jars, owing to the fact of having both elastic air and steam behind the water. They are economical in the use of steam, as when empty crane or light load is lifted the steam works expansively, with other minor advantages.

WORLD'S FAIR NOTES.

Interesting to Foreign Exhibitors.

Through the request of Traffic Manager Jaycox, Acting Secretary Nettleton of the Treasury Department has consented to make a most favorable ruling in the interest of intending exhibitors at the World's Fair. He has agreed to have some one appointed at every port of entry to look after exhibits sent to Chicago. It will be the duty of these agents to forward without delay or appraisal exhibits regularly consigned to transportation companies.

This concession was never previously secured for an exposition in this country. The plan will greatly facilitate the shipment of exhibits, for the agent will be charged with the further duty of looking out for all goods not regularly consigned. In all cases where exhibits are not properly consigned and on which freight charges have not been prepaid, the agent will care for them without cost to the exhibitor or the Exposition Company until arrangements can be made for forwarding them to Chicago.

The Treasury regulations provide there will be no customs duty or charges exacted from exhibitors, but it has been always customary for charges to be made by Custom House brokers for blanks and clerical work at the port of entry. This charge Mr. Jaycox has induced the railroads in whose care exhibits have been consigned to absorb, and the exhibitor will thus be saved a cost ranging from \$3 to \$10 on every shipment.

Mr. Jaycox has just returned from a trip to the East, where he brought about these two results. At New York he arranged with the railways, express, and other transportation lines at that port, and also at the ports of Tampa, Mobile, Newport News, New Orleans and Galveston. From New York he went to Boston, made similar arrangements there with the various transportation lines between that city and Chicago, and also for Portland and Montreal. Philadelphia, Baltimore and Norfolk were next visited and the arrangements completed. From Chicago he has concluded similar arrangements with the lines operating between Chicago and the ports of Detroit, Vancouver, San Francisco and Port Huron. Mr. Jaycox has left for St. Paul to make arrangements for the ports of Tacoma, Portland, Ore., and Port Townsend, Wash.

These complete arrangements for the through shipment of goods without intermediate cost will be gratifying news to intending foreign exhibitors. When James Dredge, representing the English World's Fair Commission, and Herr Wermuth, the

Imperial German Commissioner, were here last September, they laid the greatest stress on the proper adjustment of this matter. At that time the railroads could scarcely be induced to do anything. Mr. Jaycox, together with Commissioner V. D. Groner, chairman of the Committee on Tariffs and Transportation of the National Commission, has since then induced the railroads to make no charge for the transfer of exhibits from steamer to rail at the port of entry in the United States. However, on exhibits returned to the seaboard free there will be the usual charge of 5 cents for transfer from rail to steamer. Lastly, the railroads have agreed to make no charge for brokerage fees, and the Treasury Department will both hurry along consignments and aid in other ways their prompt delivery at the exposition grounds.

The Congressional Appropriation.

An unexpected turn has taken place in financial matters connected with the fair. The managers now are quite confident that they will realize the full \$5,000,000 expected from Congress. The appropriation of \$2,500,000, it will be remembered, is to be paid over in silver tokens, of a special design, of the legal value of a half dollar. It is expected that these can be sold as souvenirs at not less than \$1 each. The managers have already received offers from responsible parties of \$5,000,000 for the entire issue, but there is objection against putting them in the hands of speculators. Bids have been made up to \$250 for the first souvenir coined, \$25 for the 1492d and high rates also for the last souvenir coined.

At a meeting of the Board of Directors on the 12th inst. the following action was taken: Lyman J. Gage started the most important business of the meeting when he introduced the following resolution:

Resolved, That the Finance Committee be and is hereby instructed to prepare and submit to this board at its adjourned meeting proper resolutions authorizing the issuance of bonds or debentures of this corporation which may be necessary to provide sufficient funds to complete the work of the exposition to the opening thereof, so far as such funds are not available from other sources.

The resolution was unanimously adopted. Its purpose is to anticipate the receipts due from now until the opening of the fair, such as the recent Congressional appropriation, but which will not be available for some time, while the money is needed now.

Speaking of the proposed issue of bonds after the meeting was over, Mr. Gage said that he thought about \$4,000,000 would be needed. The bonds could be made payable January 1, 1894, and considering their short life, he did not think they could be floated at less than 6 per cent. Such an interest would be as low as a bond running only for a year and a half could be sold for.

After this matter had been disposed of Mr. Winston put in the following resolution concerning the disposal of the souvenir half dollars authorized by the recent action of Congress:

Resolved, By the Board of Directors of the World's Columbian Exposition, that the treasurer of this corporation be and is hereby authorized to dispose of souvenir coins provided to be issued by the United States in aid of the World's Columbian Exposition, by the act of Congress approved August 5, 1892, at the price of \$1 for each of said coins, as follows:

The treasurer shall sell the said coins in sums of 50 or multiples thereof only. He shall accept no order for said coins unless the said order is accompanied by the requisite amount of money to pay for the coins ordered, or its equivalent upon paper upon which the cash can be realized immediately in Chicago; he shall accept no order except upon the expressed condition that the order shall be filled, only in the event that the said coins so ordered are received from the United States; he shall comply with applications for said coins in order in which the said applications are received.

This provoked some little discussion, which finally resulted in a reference of the resolution to the Finance Committee. It was also decided to refer all communications containing offers for these coins to the same committee, and request it to bring in a report as to the best method of disposing of them at a profit.

The Electric Fountains.

Two electric fountains are to be constructed at Jackson Park, compared to either of which the one in Lincoln Park will sink into insignificance. A bid for the construction of these fountains was offered the Grounds and Buildings Committee last week by Lieutenant Spencer of the Edison General Electric Company. This bid, which was about \$48,000 for the two fountains, was referred to Chief of Construction Burnham.

The fountains will be located east of the Administration Building, one on each side of the larger fountain at the west end of the basin. They will be much larger and much more beautiful than those at the recent Paris Exposition. To supply them with water there will be a 24-inch main for each and a pressure of 100 pounds to the square inch will be supplied. This will force the water 175 feet into the air. The jets will be in three rows and will number several hundred.

Some time ago it was thought that it would be necessary to give up the idea of having electric fountains. The English companies that have heretofore built them seemed to be banded together to extort an unreasonable price from the exposition. Just as it was decided that it would be necessary to give up the fountains L. Steiringer, consulting engineer, volunteered to draw plans. His offer was accepted, and within six weeks he had completed his work. Then the Edison people took it up, and made their bid. They propose to construct and operate the fountains, furnishing the workmen, for the price given above. As the English builders demanded \$100,000 for the mere construction work, the Edison bid seems to be quite reasonable. The foundation work will be done this fall, but the pipes will not be put in until next March. The test will be made in April, and every night after May 1 the fountains will play, blending their colors in every possible manner for the benefit of Chicago's guests.

Missouri's Mineral Exhibit.

Prof. J. K. Gwynn, Executive Commissioner of the Missouri World's Fair Board, has returned to St. Louis from Southwestern Missouri, where he has been in the interest of the State mineral exhibit, bringing with him many valuable and highly illustrative specimens of the mineral wealth of that richly favored section. At Aurora a carload of splendid specimens was gathered for immediate shipment to Chicago. Arrangements have been made for thoroughly prospecting many of the yet undeveloped portions of the State for specimens. The work on the geological and relief maps, under the direction of State Geologist Winslow, is progressing satisfactorily.

Model of the First Locomotive.

The original working model of the first locomotive ever run in England was made by William Murdock, an assistant of James Watt and co-inventor with him of the stationary steam engine. It was a small affair, but it none the less embodied the successful application of a new force in mechanics, and hailed one of the most important discoveries of the nineteenth century.

Murdock completed his high-pressure, non-condensing locomotive in 1781 at Soho, England. It was not in actual operation, however, until in 1784 at Penruth,

Cornwall, where Murdock lived. Numerous successful experiments were made there in a private room on a circular railway and on the village street, where it ran away from its inventor, attaining a speed of from six to eight miles an hour. But Watt, fearing that his co-worker's usefulness as a business partner was impaired by his too diligent pursuit of what he deemed "impractical schemes," persuaded him to abandon further experiments in this direction. The working model was consequently laid aside until years after other inventors had brought out locomotives.

In 1883 the Messrs. Richard and George Tangye, locomotive builders at Birmingham, purchased the long neglected model from Murdock's great-grandson, and have since owned it, placing it in the Melbourne Exposition of 1889, and subsequently in the town hall of Birmingham, where it is still carefully preserved. In 1891 the Messrs. Tangye presented the State Historical Society of Wisconsin with an exact copy of the original model complete as to the minutest detail of material, size, form and color.

Chief Smith, while negotiating for the loan of the English working model, became cognizant of this fact, and at once applied for the reproduced model in Wisconsin, with the most satisfactory result, Secretary Thwaite having cheerfully consented to its exhibition at the World's Fair in Chief Smith's department. It is the only model but one in the world of the first high-pressure steam engine ever made, and though (like the original) of small dimensions (23 inches long, 9 broad and 15 high), it will constitute one of the most interesting historical attractions among examples of primitive construction of railway engines.

Chief Smith has also secured the promise of two monster locomotives to adorn the entrance to the Railway World's Fair Passenger Station, inside Jackson Park. The Rogers Locomotive Works have agreed to furnish one and the Brooks Company the other. Each locomotive will weigh 160,000 pounds, and be mounted on a pedestal. They will stand on either side of the main entrance.

Progress on Buildings.

There are now 8488 men on the work. This increase is due to the activity of work on the various State buildings, special structures and concession buildings. The grass plots, flower beds and roadways are being made. Nearly all the ornamental railings and balustrades around the lagoons are finished. Five large steam rollers are at work packing down the permanent crushed stone roadways and paths around the Woman's and Horticultural buildings. The landscape work is nearly finished around these two buildings, and John Thorpe of the Bureau of Floriculture is busily engaged on the large "Rockery" which is to be placed in the central dome of the Horticultural building.

Of the large buildings not yet completed the Manufactures Building is getting along most rapidly. The skylight glass is being rapidly placed over the nave trusses. The iron work is entirely finished on Machinery Hall and some of the sculptured figures have been placed along the ridge-line of the roofs.

Decorative fresco work has begun in the lobbies of the Agricultural Building, and the large sculptured pediment is being placed. The staff work is being rapidly put on the Agricultural Annex. The superstructure is well under way for the colonnade connecting the Agricultural Building with Machinery Hall.

In the Fisheries Building the aquarial tanks are nearly completed.

Upon the Palace of Fine Arts staff work is nearly finished.

Twenty-three State buildings are in progress. Montana's will probably be the first

finished, for the interior work as well as the exterior staff work is already well advanced.

On the Mines, Transportation and Woman's buildings little now remains to be done except the interior decoration. The work on the Electricity Building is being rapidly advanced. The staff covering on its towers progresses well. The large hemicycle at the main entrance is now being constructed. Under this the statue of Franklin will be placed.

The Government structures are being actively pushed forward. The main building is nearly finished, while the brick warship (Illinois) begins to look like a real man-of-war. Its white covering of cement and smoke stacks are in place.

The elevated railroad commenced work last week. The concrete foundations are being placed in the northern portion of the park. The Westinghouse Electric Company are also well under way with their contract for the wiring of the various buildings.

Miscellaneous.

T. T. Swinburne, the poet, has written to J. M. Samuels proposing the columbine as the Columbian Exposition and national flower. He gives as reasons: "It is most appropriate in name, color and form. Its name is suggestive of Columbia, and our country is often called by that name. Its botanical name, *Aquilegia*, is derived from *Aquila* (eagle) on account of the spur of the petals resembling the talons and the blade the beak of the eagle, our national bird. Its colors are red, white and blue, our national colors. The corolla is divided into five points, resembling the star used to represent our States on our flag; its form also represents the Phrygian cap of Liberty, and it is an exact copy of the horn of plenty, the symbol of the Columbian Exposition. The flowers cluster around a central stem, as our States around the central Government."

Two hundred English electricians have promised to visit Chicago next year and attend the World's Fair Electrical Congress. Prof. Elisha Gray, chairman of the committee on this congress, has returned from Europe. He says he visited France, England, Germany, Austria, Roumania, Turkey, Italy and Greece. He says interest in the proposed congress was pronounced.

E. R. Meeker and C. P. Willard of Chicago were granted the exclusive privilege of putting on a fleet of pleasure steamboats at Jackson Park. These boats will be operated in the great basin at the park and in the outer harbor. They will also run to the Battleship Pier at the north end of the park and in the lagoon, which is near the site of the proposed convent of La Ribida. Twenty boats will be put into service.

The Old Colony Steamboat Company of Boston, Mass., will construct a showcase to occupy 128 square feet in the marine division of transportation exhibits, in which they will show an elaborate model and drawings of their passenger steamer *Puritan*, also model and drawing of their freight steamer *City of Taunton*. The purpose of these exhibits is to show the excellence of the steamers in size, speed, elegance and capacity.

The Japanese Government has perfected arrangements to send to the World's Fair 2000 of its middle class citizens and after the fair have them make a tour through this country so that they may learn its manners and customs, all expenses to be borne by the Japanese Government. The Milwaukee and St. Paul has just made a contract for carrying these people from St. Paul to Chicago. The Canadian Pacific will take them to Winnipeg and the Great Northern thence to St. Paul.

The New York *Mail and Express* last week published a leading editorial proposing a railroad fare of \$1 to Chicago during the World's Fair for all workmen in the United States living within 1500 miles of Chicago, and showing how the railroads can carry the business with a margin of profit.

Work began last week on the Arkansas World's Fair building. This structure has the unique distinction of being designed by a woman and having its construction superintended by the designer, who is Mrs. Jean Loughborough Douglass.

Holbrook F. J. Porter has been appointed engineer of the Department of Machinery under Chief L. W. Robinson. Mr. Porter has been assistant mechanical engineer at Jackson Park.

The Crops.

The New York *Sun* claims to have taken especial pains to secure accurate information respecting the wheat crop of 1892, and is of the opinion that expectations of a yield only a little less than that of last year are wholly unwarranted. "State reports and other creditable authorities show that the winter wheat areas, as a whole, are not likely to give more than an average yield; and that the spring wheat region will produce below the average. Assuming that the area sown to both varieties equals that of 1891, the indications are for an aggregate out-turn of about 480,000,000 bushels, being some 132,000,000 less than the reported product of 1891, and showing likewise that the exportable surplus, from the crop of 1892, will be about 140,000,000 less, as domestic requirements have increased fully 8,000,000 bushels since last year." And in regard to the foreign markets all European crops indicate a yield below the average, so that conditions compared with last year are radically changed. Some of our largest grain operators estimate that we have in the United States a wheat crop say 100,000,000 bushels less than that of last year, and no proof that Europe has much more than it had a year ago.

The English Board of Trade has just issued an order, which will come into force on October 1 next, reducing the renewal and other patent fees for inventions as follows:

Before expiration of 4th year.	£5 instead of £10
Before expiration of 5th year.	6 instead of 10
Before expiration of 6th year.	7 instead of 10
Before expiration of 7th year.	8 instead of 10
Before expiration of 8th year.	9 instead of 15
Before expiration of 9th year.	10 instead of 15
Before expiration of 10th year.	11 instead of 20
Before expiration of 11th year.	12 instead of 20
Before expiration of 12th year.	13 instead of 20
Before expiration of 13th year.	14 instead of 20

On enlargement of time for payment of renewal fees:

Not exceeding one month.	£1 instead of £3
Not exceeding two months.	3 instead of 7
Not exceeding three months.	5 instead of 10

These reductions will be of great service not only to patentees, but to purchasers of patent property.

During the first six months of the current year the exports of Spain were as follows, in metric tons:

	1891.	1892.
Blende	4,947	5,049
Calamine	15,820	19,509
Cupriferos pyrites	385,937	270,425
Iron pyrites	87,729	235,862
Copper matte	10,680	15,613
Iron ore	2,198,780	2,309,721
Manganese ore	880	5,415
Copper precipitate	17,456	19,560
Quicksilver	1,823	1,577
Base bullion (lead)	36,453	36,836
Refined lead	31,907	35,939
Spelter	960	1,017

The exports of iron ore in 1890 were 3,054,229 metric tons.

Photography in Mechanics.

An important factor in the sale of mechanical manufactures, according to modern commercial methods, is the picture illustrating the article to which it is desired to call attention. Newspaper articles and advertisements, catalogues, circulars, letter and bill heads, and envelopes, and most other available mediums, are used for the purpose of illustrating the various articles manufactured. So universal has this custom become that its cost is considered quite as necessary and legitimate an expense as any of those classed as "incidentals." Electrotype of the illustrations are generally used for printing in connection with such matter as requires the use of type, as where any other method is employed the press work for the picture requires to be done separately from the reading matter. The electros are made from two classes of relief engravings—woodcuts and photo-engravings. In making the former, the usual method is for the delineator to make the drawing freehand on the whitened surface of the boxwood block, and from this the engraver cuts the lines necessary to produce the effects of outline and perspective, high lights and shadows. Frequently the work of the delineator is dispensed with and a photo print of the subject made directly on the whitened and silver sensitized surface of the block. This, if the photo-negative be a good one, will give the best results, as it is more reliably accurate as to details. By either method, however, the quality of the woodcut will depend on the skill of the engraver in reproducing, entirely by lines, the solid tints of the drawing or photograph. In photo-engraving, while there are several processes employed, they are all alike as regards the generic principle involved, which is the sharply defined etching produced on a gelatine surface by the action of the actinic or chemical light rays, in decomposing the silver salts used for sensitizing. A high degree of skill is necessary for the production of good work by this process, as a large amount of manipulation is required before the electro is ready for the printer. Photogravures, photolithographs and similar work in which the original solid tints are reproduced in the print, while exceptionally fine, are unfortunately inapplicable to such commercial purposes as those under consideration. As photo-engravings, like woodcuts, are composed of lines in relief, they cannot be made directly from a negative taken from the object itself. It is necessary, therefore, that a line drawing be made, from which the photo-negative is taken. This is sometimes made by the delineator, freehand, without any other guide than the eye and such proportionate measurements as are possible. Usually, however, the method pursued is to make a negative several times larger than the size desired in the engraving, and from this a silver print on plain paper is taken. The drawing is then made directly on the face of the print—that is, their equivalent in lines is made of the various tints, giving form and tone to the picture. The ink used for the drawing must be absolutely black, while the execution will determine the quality of final result, so far as regards the correctness of the reproduction. From this drawing the silver print upon which it was made is entirely bleached out by chemical means, and the ink lines remain intact. A photo-negative of the size required for the engraving is then taken, and from it, by any one of the several processes, may be made the electrotype used for printing. The effect of reduction in size from that of the drawing is to render the picture soft and pleasing, without in the least decreasing its sharpness of detail. Of course

where it is necessary to avoid reversing the picture, a positive photo plate must be made from the negative, otherwise the picture would have, lettering, for instance, reading from right to left.

An important point in the value of all illustrations is not so much the correctness with which the originals are portrayed as it is the self-evident fact that the picture is the actual reproduction of the object. Without this peculiarity it might be accepted as a representation embodying possibly quite as much of imagination as of reality. And this is true quite as much of the photo reproduction as of woodcut; the fact of their being line engravings deprives them of the appearance of having been photographically delineated. For this reason the use of photographic silver prints has become very general by manufacturers of many lines of goods. Machinery, tools, hardware, stoves, furniture, mantels, &c., are shown to great advantage in a well-executed photograph, and they have an additional advantage as advertisements in that they are generally received with greater respect, and are preserved when cuts would be relegated to the paper basket.

One great objection to their use, however, is their considerably greater expense than that of cuts. The latter, after cost of making the electrotype, amounts to comparatively little for press work and paper; and while the cost of a negative may be very considerably less than that of a woodcut or photo-engraving of the same subject, the expense of paper and printing from the former cannot be reduced below a much higher figure. As, however, the value of photos may fairly be inferred from their extensive use, the question of how most cheaply and conveniently they may be produced becomes of considerable importance. The usual method is to send for the photographer, who comes with his camera and takes the exposure. After waiting from a day to a week he sends a proof for approval, and if satisfactory, the order for prints is executed, light permitting, as early as the amount of other work on hand will permit. This generally means from one to two weeks from time of making the negative, and very frequently this delay amounts to a serious inconvenience.

That in all things possible a manufacturing establishment should be self-contained and depend on outside sources only for such work as cannot be profitably done within its precincts, will hardly be disputed. Every establishment in which the work is made from design drawings has its drafting department. The draftsmen and designers are usually men of intelligence and of attainments more or less scientific. Photography is a science no longer confined to professional practice, as through its wonderful development among amateurs some of the most important improvements have been made. Many of these amateur photographers are men whose occupations are in the line of designing and drafting in the several branches of manufacture alluded to. For such as are not already proficient, the acquisition of the necessary knowledge and skill to make them so would be more in the nature of recreation than a task, more pastime than study, and it is safe to say that were this additional duty to become a generally recognized feature of the drafting room, there would be few complaints from the draftsmen.

The cost of an outfit complete, for all the requirements, from taking the exposure to finishing the prints, may be made comparatively small. Of course the indulgence in unnecessarily expensive apparatus and accessories would be a temptation to the amateur, but need not be so to the business man, who is purchasing for the use of others than himself, and would therefore take a cold-blooded matter-of-

fact view of the requirements. For all work not of an exceptional character the expenditure of a sum not to exceed \$100 will provide not only necessities but conveniences as well, and the amount of space required for an operating or dark room may be made as small as 6 or 8 by 10 feet. The latest improvements in facilities for photography permit of the production of almost all varieties of work with the same apparatus and materials, and this by a wonderfully small amount of labor and trouble as compared with the more antiquated methods and appliances. The use of emulsion or dry plates has been a most important step in simplifying the production of the negative, not only as regards the matter of manipulation, but also the greater certainty of results under varying conditions.

The standard makes—such as Carbutt's, Cramer's, Seed's, and several others—are familiar to all users of the camera. The wonderful sensitiveness and almost absolute uniformity as to quality and rapidity seems almost inconceivable when we realize how brief is the interval of exposure necessary to produce the almost perfection of detail in an instantaneous picture. For instance, with a proper light, a picture may be taken of a rapidly moving object—a revolving wheel, for instance—and the action of the shutter be so quick that the wheel will have the appearance of being at rest, the spokes and all parts being as sharply defined as if there were no movement whatever. When it is considered how small an amount of motion with relation to the time of exposure it requires to give a blurred or indistinct outline, and compare this with the rapid motion of the circumference of the wheel, some idea may be had of the speed of the shutter and the consequently infinitesimal duration of exposure of the plate to the action of the light. And, notwithstanding their extreme sensitiveness, the same plates may be used for time exposures, whether long or short, and give equally good results; although all makes are finished of different sensitometer numbers, to suit all kinds of work.

The principal advantage of using the less rapid plates is that they are much less liable to fog or other injury from accidental exposure to light than the instantaneous grade, and are, therefore, somewhat more convenient. It may be said that as much is due to the quality of lens used as to that of the dry plate. Possibly so. The plate could not receive the image of the object unless it were thrown on it by the lens. This, however, does not in the least detract from the wonderful promptness with which the plate responds to the action of the lens. In regard to the latter, the degree of excellence does not depend entirely on the cost. While the expensive high grade lenses are, as a rule, reliable, as capable of giving perfect work, there are those of cheaper and simpler construction, at far less cost, which are capable of work which cannot be excelled by the best. Naturally, much depends on the care and skill of the operator in regard to arrangement of the object, light focusing, &c., as no amount of excellence in the facilities will produce good results if carelessly or ignorantly used.

The gist of all this is, the suggestion that it is practicable, as well as desirable, for all establishments whose line of business requires the use of photos for presenting their goods, to make instead of buying them. As a means to this end, it would be desirable that mechanical photography become a regular branch of study in technical schools, and that it be considered an essential element in the education of mechanical draftsmen and designers. Also that the dark room and a complete photographic outfit form an adjunct of every well regulated drawing room, and as necessary as the universal

blue-printing apparatus. It is not many years since the latter was unknown—now it is considered indispensable. When it is considered how great the inconvenience—unavoidable, perhaps, but none the less real—of depending on outside parties for this work, then, if it be a fact that it is both practicable and economical to have it done in the drawing room, it would seem quite as inadvisable to forbear the advantage of such a possibility as to have the working drawings themselves made outside. That some of the more progressive manufacturers have adopted the plan—and, it may be safely asserted, will continue to follow it—may be considered a fairly good argument as to its desirability; and it is not improbable that the time may come when it will be considered as indispensable to such lines of business as have been mentioned. That

specifications for new and existing steam and power plants, with a view to economy of fuel and consequent prevention of waste; also examinations, tests, reports, estimates and superintendence.

Automatic Self-Closing Hatch Doors.

In the accompanying drawings we present views showing two different methods of closing elevator hatchways constructed by the Safety Hatch Door Company of 45 Duane street, New York. It will be seen that the two designs illustrated differ very materially, both in construction and operation. In the first the elevator platform carries a guide plate shaped as shown, which at each floor is adapted to engage with a friction roller carried on the long arm of a lever, the other arm of which is

all the doors it met on the road down. The slot, formed in the hatch door and adapted to receive the key is provided with a roller normally pressed outward by a spring and arranged in suitable openings in the guide posts. As the key strikes this roller a bolt is thrown in by the lower curved portion of the key and the roller itself enters a straight slot between the two branches of the key. The next floor met is operated upon in the same way. During the upward passage of the elevator the lower floor carried on its bottom when it meets the recesses formed in the guide posts permits the bolts to spring out, due to the curved lower portion of the key, when the next hatchway door comes into position, so as to be released at the next floor. An important advantage in this arrangement is that the elevator always carries the same number of doors,

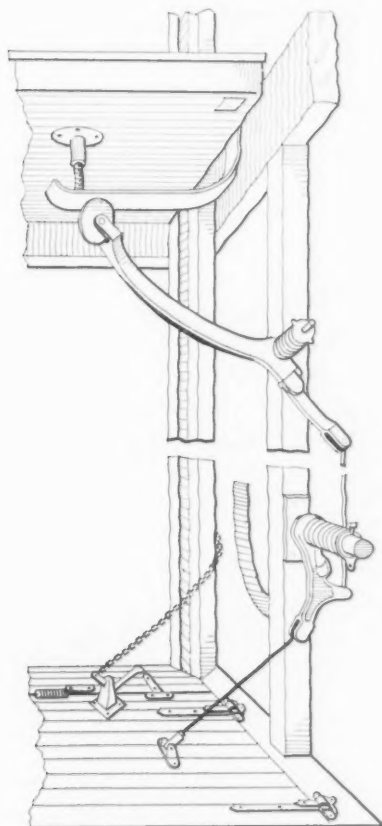


Fig. 1.—Automatic Hinge Door for Fast-Running Elevator.



Fig. 3.—Key Enlarged.

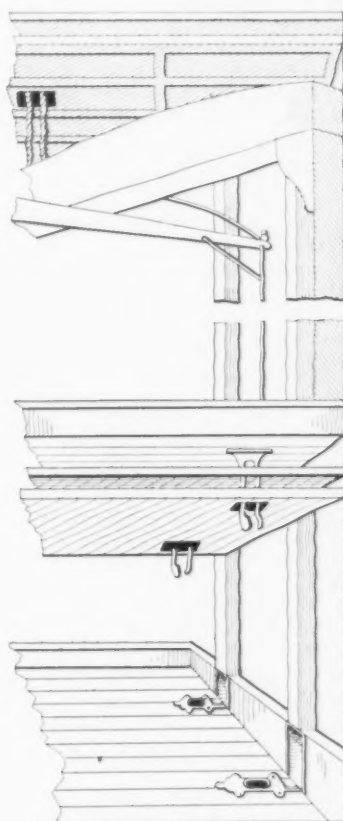


Fig. 2.—Keyed Carrying Door.

AUTOMATIC SELF-CLOSING HATCH DOORS.

there will be modifications and improvements in the kinds of photo prints used for commercial purposes is probable as a matter of development. For instance, the use of albumenized paper, with its unpleasant "shine"—making it necessary to hold the picture in a certain position with reference to the light—might be dispensed with to advantage. In its stead a plain surface paper may be used, upon which the picture will have all the softness and artistic character of an etching, and may be viewed in any convenient position, irrespective of the direction of the light. In sharpness of detail, the print is quite equal to that from the same negative made on albumenized paper.

J. C. Slocum, late mechanical engineer of the World's Columbian Exposition, has established an office as consulting engineer at 239 La Salle street, Chicago. We are in receipt of a very daintily engraved circular from Mr. Slocum, giving a number of very good references, and stating that he is prepared to furnish plans and

attached by a crank rod with one arm of the bell crank lever, arranged so as to lift during the descent of the platform the hinged door. Provision is also made by means of which the doors are raised during the ascent of the elevator.

In the next two views a different operation entirely is illustrated. In this the hatch doors are raised and carried by the elevator and deposited at the floor line as the elevator passes. For illustration we will suppose that the building is provided with four floors and that the elevator is at the top. On top of the elevator rest four doors, which during the descent are adapted to be left at the respective floors. As the elevator reaches the first floor from the top the door closing that hatch is engaged by the hook shown detached in Fig. 3, which passes through suitable openings, as shown in Fig. 2. As it goes down the topmost door carried on top is left at that floor. The same operation is repeated until it reaches the bottom, when it has deposited, one at each floor, all the doors carried on top and has taken up by means of the keys

That is, as it leaves one it picks up another, so that it always carries the same load. These devices are both in practical operation and have been found to work most satisfactorily.

The boiler-makers' strike in Chicago has now been in progress for 15 weeks. A few shops have succumbed, but the great majority are working non-union, with such help as they can secure. Although crippled considerably, the boiler manufacturers are apparently as resolute as when the strike began. The force thrown idle at first is said to have been 700 men. Of these, 500 have secured work in union shops in Chicago or elsewhere, 125 obtained employment in other occupations and 75 are reported to be still idle and drawing support from those at work. The manufacturers state that they are steadily increasing their force of non-union men and will in time recover lost ground. They have seen a great deal of work sent to other cities because it could not be completed in Chicago in the time specified, but such losses have made them

only more determined to fight to the end. The controversy has been costly to both sides, and has also interfered to a great extent with related branches of trade.

The Fellows Steam Steering Gear.

Some time since a tug plying in Boston harbor was fitted with this steam steering gear, which has been in constant service, and has given entire satisfaction. The position of the machine is not by any means arbitrary, as it can be set up anywhere on board where there is $2 \times 2\frac{1}{2} \times 6$ feet of space. In the case of the tugboat it is located on the boiler forward of the steam drum, and is bolted to the angle irons spanning the space between the sills of the house. A chain leads from the chain wheel down through sheaves incased in the sills, thence along the deck a short distance, and is clamped to the existing tiller rods. Copper wires connect the valve with a lever in the pilot house, secured in front of the hand wheel. A slight movement of the lever in the direction the hand wheel is to turn causes the latter to revolve rapidly until the lever is released or the rudder comes against its chocks—"hard up." The movement is retarded toward the end of the stroke, so that it does not swing the rudder with full force against the chocks. The steam apparatus does not disturb the hand steering gear in any way; a clutch operated from the pilot house will instantly disconnect the steam gear, leaving the hand gear free to be operated in the usual way. The steam power can be connected again without leaving the pilot house.

We now present a description more in detail, in accordance with the patent issued to B. W. Fellows of Beverly, Mass. Some minor changes have been made in the device, but the principal features remain the same. The apparatus consists of a steam cylinder, A, through the heads of which passes the piston rod *b*. To the ends of this rod is secured a bar, C, having a rack, *c*, the teeth of which mesh in the teeth of the pinion D, which is secured to the shaft *d*, the latter being journaled in suitable bearings. The rack bar is suitably guided in bearings secured to the cylinder. On the shaft *d* is loosely journaled the chain

steam steering apparatus is in use. In case any accident should occur to the apparatus it is only necessary to disconnect the clutch D' from the chain wheel clutch E', by which the chain wheel E is made loose on its shaft, thus allowing the rudder to be worked by a hand wheel or other

to the opposite ends of the cylinder, as shown in Fig. 2. Steam is admitted through the passage *i* and exhausted through the ports *k*.

The valve G may be actuated by means of a lever, *g*', secured to the valve spindle *g* and any suitable connecting mechanism

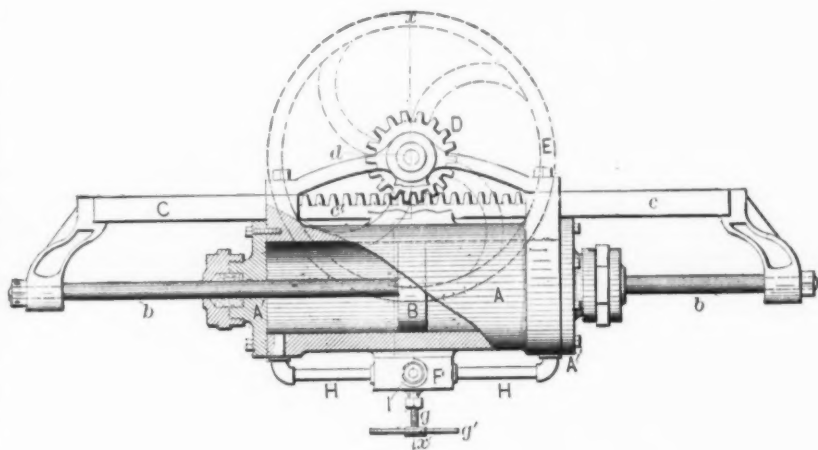


Fig. 1.—Plan.

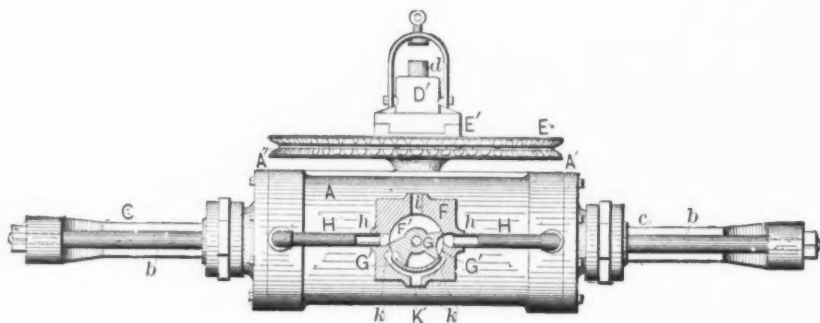


Fig. 2.—Front Elevation.

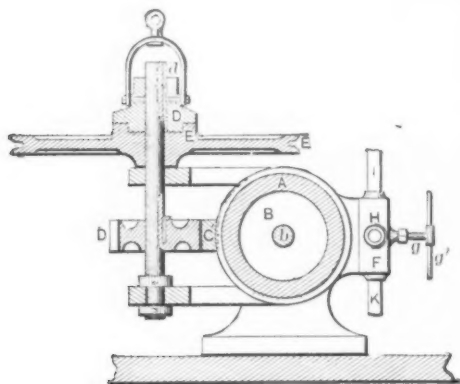


Fig. 3.—Cross Section on Line x x of Fig. 1.

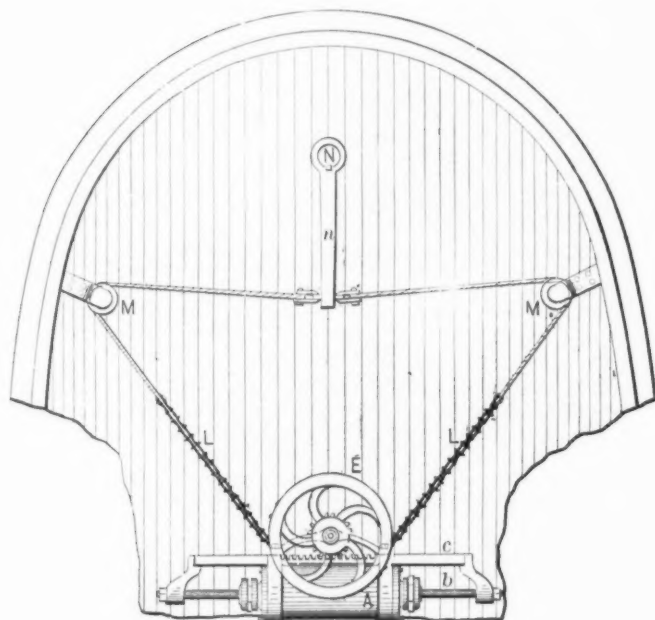


Fig. 4.—Partial Plan of Vessel, Showing Position of Steering Gear.

THE FELLOWS STEAM STEERING GEAR.

wheel E, provided with a suitable clutch, E', adapted to engage with a clutch, D', which is splined on the shaft *d* and capable of longitudinal adjustment on the latter. The object of the clutch D' is to couple the chain wheel E to the shaft *d* and to secure the parts together as long as the

means independent of the steam steering device.

Within the valve chest F is a cylindrical cavity, F', in which is placed the oscillating valve G formed at its opposite ends with the receivers G' G'. From the cavity lead the ports *h h* and pipes H H

to the place on the vessel where the helmsman is stationed. By turning the valve, as shown in Fig. 2, the steam pressure from pipe I will be conducted to the left-hand end of the cylinder A, causing its piston B to move toward the right, while the steam in advance of the said piston is

exhausted through the pipe K, and *vice versa*.

The steam steering device may be connected in any suitable manner to the rudder post, according to the construction and arrangement of the vessel in which it is to be located, and Fig. 4 represents one way of making such a connection. In this L is a chain (in whole or part) leading from the chain wheel E to guide pulleys M M and the tiller or wheel N, secured to the rudder post N, as shown, and it will readily be seen that the reciprocating mo-

It is the same kind of reasoning and the same kind of influence that have caused the throwing of these bricks and the assaults."

The Brainard Bale-Tie Machines.

The machines herewith illustrated have been brought out by the Joliet Steel Bale Tie Company of Joliet, Ill., for the manufacture of wire bale ties. Fig. 1 represents the machine which straightens, cuts

it, which is injurious to wire containing soft spots or unevenly annealed. The capacity of this machine is 60 cuts per minute, or 100 bundles per day.

The loop-forming machine, shown in Fig. 2, is a companion to the straightening machine. This machine not only curves the end of the loop, but also twists the loop end of the wire back over the stem a sufficient number of times to insure the loop from being pulled out by any strain which may be brought upon it. The machine is made of extra heavy gearing, which is of steel wherever necessary to insure durability. The capacity of this machine is 30 loops per minute, or 50 bundles per day. Two No. 1 looping machines are required to meet the capacity of one No. 1 straightener.

San Francisco News.

The Peru, another of the triumphs of San Francisco shipbuilding, left the Pacific Mail dock with a large and valuable cargo bound for China and Japan on the 5th. I have previously given a description of her in the columns of *The Iron Age*, hence it is not necessary to dwell on the matter here. The rapidity with which she was built and got ready for active work is one of the marvels of the present day, and reflects great credit on San Francisco and her builders. It takes so long to get a Government ship ready that but few outside of the officers of the iron works and of the Mail Company were prepared to see her on the ocean so soon. We are promised something in the shape of the manufacture of gun forgings, and the labor troubles which now afflict the East, as they did the Coast a little over a year ago, may help us—as we are ever ready to profit by the misfortunes of our neighbors—to solve the problem.

The Fulton Foundry is fast making preparations to remove its manufacturing business to some suburb of this city. Its contract with the Baden people provides that the foundry shall be at work there within six months, and if the ground can be graded quick enough work will be commenced within half the time. A large force are now engaged in grading, and we may be sure that the establishment will be in operation within the time agreed on. The location of it, or rather its recent location, is now a sad scene of desolation, the sidewalk covered with charred and blackened timbers, with heaps of black ashes and portions of disintegrated engines poking through. Work will be commenced on several contracts for the building of vessels, of which I have previously in part notified you, as soon as the works are in any shape at Baden, and it is expected that 300 men will be set to work at once as soon as everything is ready.

Alameda County, however, now steps in and tries to get Fulton to break with Baden and to accept \$10,000 and a location on the other side of the bay. They have collected \$5000 of the amount.

This and other indications are not wanting that the iron industries of San Francisco, which for a good while have been under a cloud, are about to take a new departure and to assume something of the importance which their reputation would lead one to expect that they should possess. It never rains but it pours, and, doubtless, the apathy and discouragement of 1890-91 are about to be followed by a season of encouraging activity in 1892-93. There has been a much improved state of business during the past two weeks both in hardware and metals. The wheat crop is being moved and the fruit crop is selling off much more quickly than in several years. Hence a good deal of money is being distributed all through the State, and the farmers are beginning to lay in their long needed supplies. These consist

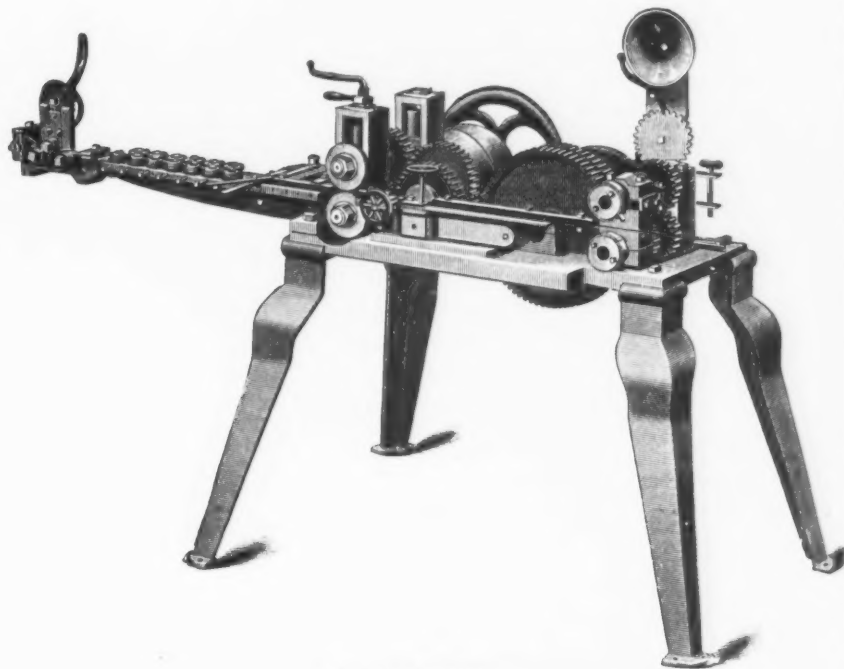


Fig. 1.—Straightener.

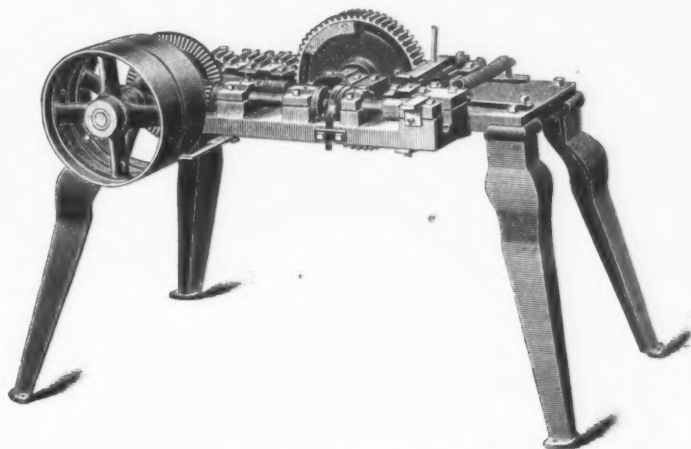


Fig. 2.—Loop-Forming Machine.

THE BRAINARD BALE-TIE MACHINE.

tion of the piston B imparts a corresponding motion to the rudder of the vessel.

Judge Pickett of the New Haven City Court, who was assailed by bricks thrown through a window in his private residence, as a result of harsh criticisms of his official conduct made by a local newspaper, took occasion to vindicate the action of the court, saying: "Precisely the same reasons that caused Bergman to make the deadly assault upon Manager Frick have induced the assaults upon the city attorney, the officers and the court. Newspapers of high and low degree, through their prejudiced and untruthful reports, stirred up Bergman with a desire to kill

and counts. It takes the wire direct from the coil, straightens it, cuts it to any length, accurately counts the wires, and rings a bell as each bundle of 250 wires is finished. It is guaranteed by the manufacturers to be made of the best quality of iron, steel and brass. The action of the moving parts is rotary in every respect, there being no stop motions, bevel or miter gear. The wire is cut while passing through the machine, which has been specially designed for handling annealed wire for the manufacture of any class of products. The manufacturers state that tests show a net gain of 10 per cent. in tensile strength in the wire after passing through the compressing rolls over the old method of stretching wire to straighten

largely of builders' and other hardware, bar and bundle iron, nails, steel, wire fencing, &c. We predict that the present favorable movement will continue, and that there will be a better business during the fall than in many years. This will be satisfactory to our iron and hardware merchants all over the Coast after the long prevailing dullness now happily passing away. The importations by sea for the past two weeks have been of fair volume. The M. P. Grace brought a great deal of

Alabama pig iron continues to arrive—the M. P. Grace having 295 tons. The market is unchanged.

Arrivals by rail for the fortnight have been 5 cars of iron, 8 cars of machinery, 5 cars of stoves, 2 cars of hardware, 3 cars of plows, 2 cars of pipe, 1 car agricultural implements, 3 cars of wagons, 3 cars of safes, 1 car of ranges, 1 car of cables; total, 34 cars; 830 boxes of nails, 2960 pounds of copper, 52,500 pounds block tin.

Combined Steam and Hand Power Elevator.

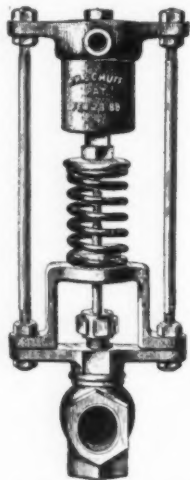
The very general demand for a simple and economical type of elevator for use in modern dwelling houses and other buildings has induced the introduction of the combination machine of which we present an illustration. This new type of elevator, which has been recently brought out by the Energy Mfg. Company of Philadelphia, is adapted for use with either steam or hand power. Primarily it is a steam elevator, but it is so constructed that in the absence of that power it can be operated manually with as great facility as a regular hand machine, and no changes are necessary when passing from one power to the other.

A single belt is used, which runs on tight or loose pulleys, and can be readily shifted from any floor; while all unnecessary machinery is discarded. The platform is so counterbalanced that it is self-lowering at any desired speed. The machine is fitted with a patent automatic brake, which holds the load at any point on the operator letting go of the hand rope. It has also a hand brake and automatic check for the top floor.

The machine is simple in design, and is made with capacity varying from 300 pounds to one ton.

The Schuff Steam-Pressure Regulator.

This regulator is designed for the control of steam in pumps, and acts equally as well where the pressure is derived from



The Schuff Steam-Pressure Regulator.

steam, water or air and for low or high pressure.

The water, steam or air is admitted from the water column or pressure tank into a cylinder or chamber in which is inserted a plunger, which, with the aid of a spring, controls the action of the steam valve, opening or closing it as may be required. The regulator is a positive cut-off for either the increase or decrease of pressure. The springs now used in these regulators are four in number and have a controlling capacity of from 50 to 140 pounds. This regulator has been introduced recently by E. A. Hanson, 163 Christopher street, New York.

World's Fair Buildings.

(With Supplement.)

Only those whose privilege it has been to watch the progress made at Chicago can clearly comprehend what an enormous amount of work has been done, and of the magnitude and beauty of the building. Our plate engravings have been prepared from photographs specially taken for us by C. D. Arnold of Chicago, the official photographer.

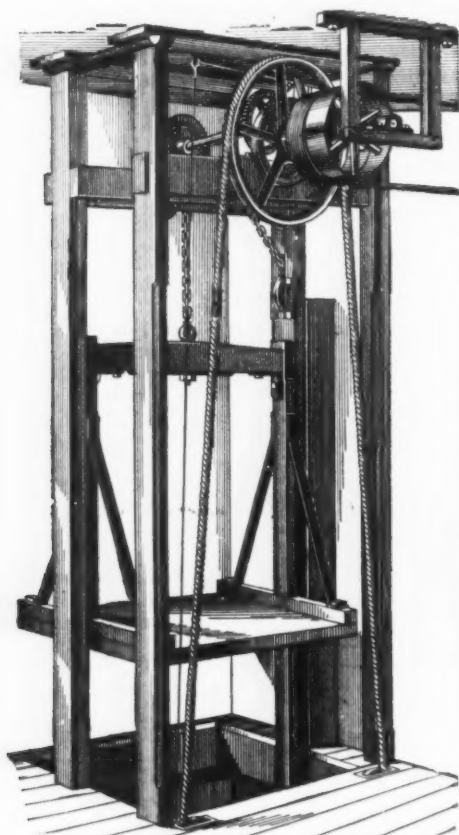
Fig. 1 is quite a good view of Machinery Hall as it appeared on July 2. The view here taken represents the main portion of the building, the annex, which is a large structure in itself, being seen to the left. There are three rows of arches in this building, all of steel construction.

Fig. 2 is a view of the arches of the main building of the exposition, which is usually called Building of Manufactures and Liberal Arts. This view is taken looking south and is intended to show the character of the work supporting the roof on the center of the building. The photographer has not attempted here to show any considerable part of this building, which is an immense structure, covering over 30 acres.

Fig. 3 shows the foot of one of the great arches of the Manufactures Building. It is an excellent illustration of the massive character of the work employed in the construction of these immense arches, which cover a span of nearly 400 feet and are 210 feet from the floor of the building to the center of the arch.

Edward Atkinson writes to the London *Economist* as showing the monetary necessities of this country: "Railway traffic of the United States has increased 340,000,000 tons since 1883, representing in money value over \$6,500,000,000 and requiring proportionate increase in the medium of exchange. A large part of this increase has been in the South and in the far Northwest, where banking facilities have been inadequate. Until the year 1882 the name of Dakota did not appear in the record of the wheat crop. In 1891 the Dakota crop amounted to 82,000,000 bushels. The net registered tonnage which passed through the Sault Ste. Marie Canal in 1890 was about 8,500,000 tons, compared with 6,750,000 tons through the Suez Canal. The tonnage of the great lakes in 1890 amounted to over 23,000,000 tons. These examples of increase in business show that nothing which can be predicted upon European systems of currency would give any rule of value for the United States."

The statement of the trade of the port of Buffalo this season is very satisfactory as regards the volume of lake and railroad business, but the showing as regards the canal trade is little short of startling. The total receipts of flour and grain by lake for the season to July 30 reached 72,570,000 bushels, which is the largest movement on record and over 17,000,000 bushels in excess of the phenomenal receipts of 1890. Of this enormous amount 52,628,000 bushels were grain proper and the remaining 20,000,000 bushels were represented by flour. The railroads secured all of the flour, equivalent to 20,000,000 bushels of grain, for shipment East, and 34,089,000 bushels of grain in addition, making a total of over 54,000,000 bushels. This is largely in excess of any previous rail movement for the same period of time. The canal, on the other hand, secured of the total receipts only 10,242,000 bushels, the smallest amount on record for the corresponding months, and the fact is referred to as evidence that the canal must either be enlarged or lapse into decadence.



Combined Steam and Hand Power Elevator.

steel in various forms—rails, bars, slabs, &c., and a large quantity of wire and wire rope, bar and plate iron, &c., besides pig iron. We have also had quite a number of consignments via Canadian Pacific.

The putting on of the competing lines of clipper ships by J. W. Grace & Co. of your city and of San Francisco and by Balfour, Guthrie & Co. of this city and Liverpool has stirred up the older companies and a fierce competition is progressing, so that the old clipper rates have been cut in two and now the highest is only about 25 per cent. of the lowest rate by rail. The railroad and steamship companies, as well as the old clipper lines, are already beginning to feel the effect of this, and it is alleged that the clipper lines and their agents have issued circulars making implied threats to shippers when the competition shall have ceased. But the starters of the new lines intend to keep in the field, while the traffic association of this city is determined to stand by them to the end.

Late arrivals of tin plate have brought up the totals for the present year to 303,336 boxes. The market is rather dull at \$6.85 for spot. The determination of fruit canners to cut down their pack has been somewhat shaken by the high price of fruit and the increased demand, and the consumption will therefore be larger than earlier anticipated.

Pig tin is weak and selling at 23½ cents. The contest as to the existence or non-existence of paying tin mines in the State still rages fiercely at times.

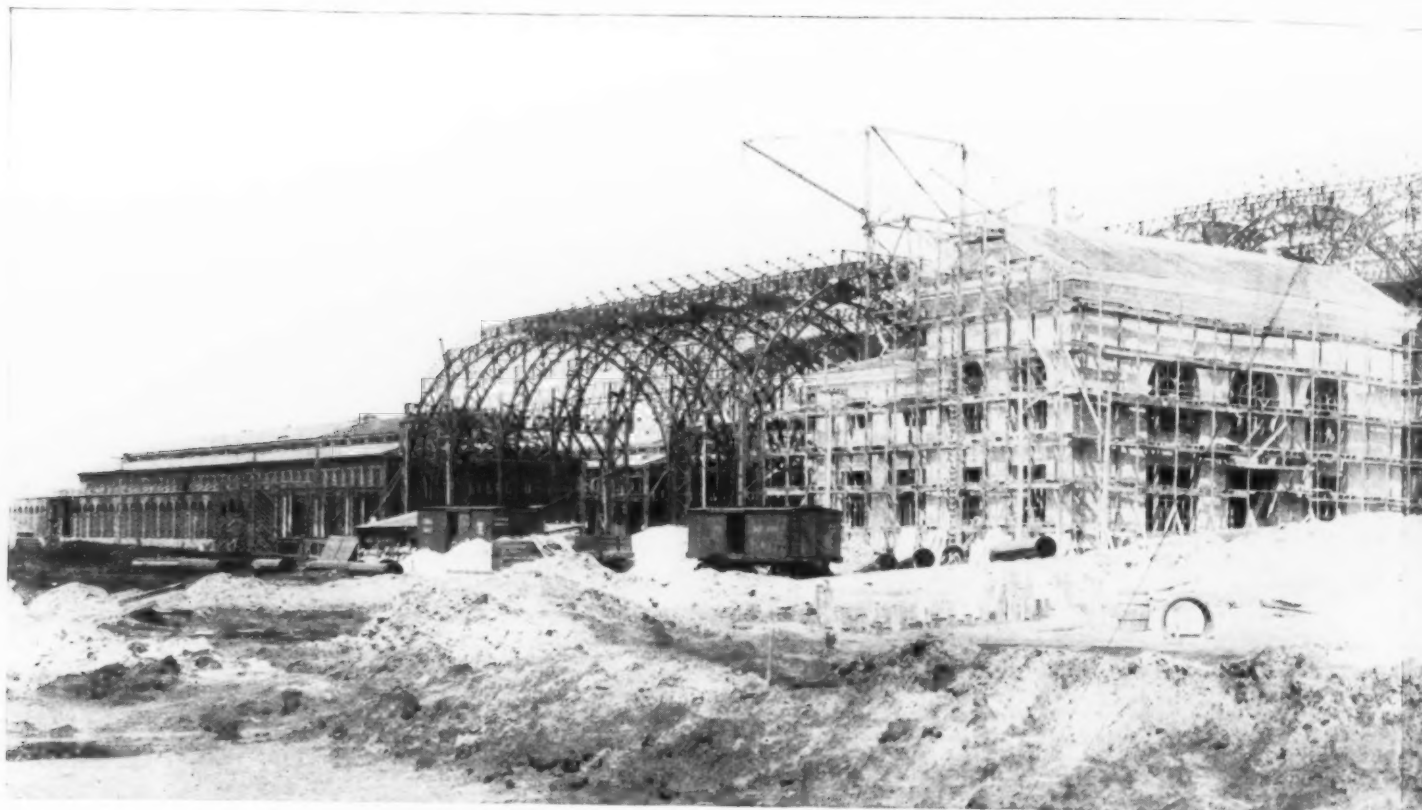
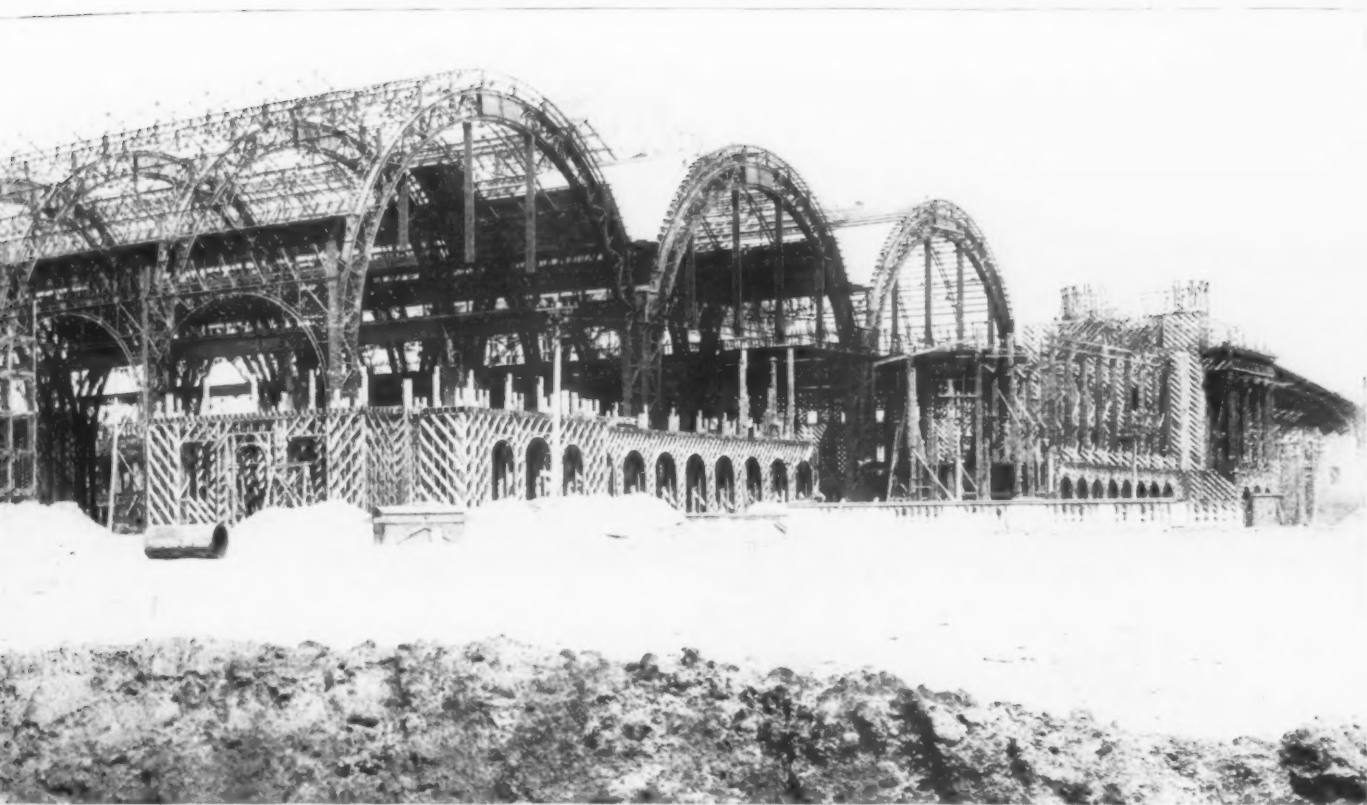


FIG. 1.—MACHINERY H.



FIG. 2.—THE ARCHES OF THE BUILDING OF MANUFACTURES AND LIBERAL ARTS.

WORLD'S FAIR



ALL JULY 2, 1892.



FIG. 3.—FOOT OF ARCHES OF BUILDING OF MANUFACTURES.

R BUILDINGS.

THE WEEK.

The Hudson River Tunnel Company, it appears from a meeting held in London, are without money, but there may be a reorganization with fresh capital.

Russians in the New England States are getting a strong hold in the factories, working at low wages.

Sales of silver bullion on the Stock Exchange have become so rare and the margin of profit so small that some of the largest dealers are disposed to quit the business entirely.

The report that a syndicate is forming in France to resume work on the Panama Canal is received with incredulity. When the canal could no longer float the loans put upon the market its usefulness ended.

The Southern Pacific or Morgan Steamship Line, which guarantees to land freight in San Francisco in 13 days via New Orleans, will shortly lay the keel for a fourth big ship similar to those now running.

The official statement of the exports of the Argentine Republic for the year 1891 shows a decrease in many items, compared with the previous year, such as hides, corn and wheat, but as a whole results are satisfactory, considering the severe financial crisis which has affected almost every interest.

Authorities at Washington claim that the treaty with Samoa gives the United States absolute jurisdiction over the harbor of Pago-Pago, and that the establishment of a coaling station there by Great Britain would be inimical to the interests of this Government.

Another car famine begins to be felt out in Kansas, owing to the movement of grain East and the large shipments of merchandise West. Increasing difficulty is expected when the new crop gets fairly in motion.

The real and personal property in Philadelphia assessed and subject to tax for city purposes for 1893 amounts to \$752,763,382, an increase over 1892 of \$17,085,610.

The Eight-Hour law passed at the recent session of Congress, designed to apply to all classes of laborers in the service of the Government, is so ambiguous in its terms that it must remain to a certain extent inoperative until an opinion can be obtained through the Department of Justice more especially with reference to the construction of public works under contracts with private firms, such as the building of naval and other vessels. Where ships are in progress of construction a strict application of the law might entail serious embarrassment. The law is complained of as discriminating in favor of those workmen who are so fortunate as to obtain employment under a Government contract.

A steamship has just been built in Denmark to the order of British owners, the tenders which were invited having been much below those from other competitors.

It is said of a Norwegian labor commissioner, who is investigating labor questions at several large cities in the United States, that he was "staggered at the high wages paid in this country." Steamship communication tends to bring about a leveling process, but a check is interposed by restrictive immigration laws.

Trouble experienced in completing the power houses for the Broadway Cable Railroad will postpone the opening until January 1.

Clipper competition around the Horn has demoralized rates by the continental

railroads, and frequent conferences are necessary.

Collis P. Huntington, professing to doubt whether either the Panama or Nicaragua canals will ever be built, has undertaken to complete a railroad line from the Atlantic to the Pacific through Honduras. To connect the two roads already well advanced will require \$3,000,000.

The freight-rate war in the California trade grows more desperate every day. A California letter says: "The heavy cut made on clipper ship freights between here and New York has been met by the railroad, which has cut down nearly one-half the rates on a dozen commodities that are not perishable." One result is an unusual movement of merchandise, which may overstock the market and demoralize business for months to come.

The Fall River cotton mills made dividends during the last three months amounting to \$538,880, as compared with \$232,250 for the corresponding quarter last year. The demand for goods was lively and the raw material cheap. Southern mills are also giving a favorable report.

Some of the new British battle ships when maneuvering in the Atlantic rollers wallowed badly, taking in water everywhere, and even the cruisers "pitched in a manner very uncomfortable to look at."

The total quantity of grain which passed down the Welland Canal to Montreal in 1891 was 295,509 tons, as against 228,513 in the previous year. The quantity on which full tolls were paid shipped from one United States port to another United States port shows a decrease from 245,932 to 202,710.

Trade unions in this city, though defeated, do not admit that they are conquered. They will try to arrange a mammoth demonstration on Labor Day with a parade that will excel any of former years.

An Eastern granite contractor, well known in Washington, says the recent granite cutters' strike in New England, which came to naught, cost in wages about \$2,800,000, an amount that would have enabled the men to have purchased half a dozen of the best plants in existence and made their own wages.

The wholesale trade done in New York by Hebrews is computed at \$250,000,000 per annum.

The Municipal Government of New York City has authorized expenditures to the amount of nearly \$19,000,000 for public works, including the new water works enlargement and dock improvements.

Five more Chinese merchants have succeeded in getting into this country, on producing documentary proof that they were not laborers.

The Thurber-Whyland Company have considerably reduced the compensation of employees, in consequence of a falling off in sales and declining profits, compared with the first six months last year.

The new American ocean flyers of the Inman line will probably be of the same length as those now building for the Cunard line—635 feet—and each cost \$2,500,000, which is about the same.

Although the Harlem River improvement is about one quarter finished, the advisability of filling up the stream is under consideration, agreeably to a resolution of Congress introduced by Senator Platt of Connecticut, presumably in the interests of the railroad companies, who regard the work as an obstruction. At a meeting of persons interested, called by the Engineer Department of New York, the subject was earnestly discussed preparatory to

a report to be made by the Engineer Department of the United States. It will be remembered that among numerous petitions sent to Congress in favor of the improvement was one by A. S. Hewitt, representing fully \$750,000,000 of active commercial capital.

The recent labor disturbances in Pennsylvania have led to proposals that the Keystone State maintain a police force of its own, and this calls attention to the fact that Massachusetts has a regularly organized force, numbering thirty-five men, most of whom are thoroughly trained to the service. The latest addition has been two women to act as factory inspectors. This police force is really the Governor's civil force for the enforcement of law and is all he has except the militia. The ordinary civil officers are in the service of the county or municipality, not of the State. This force is always at the disposal of the Governor for the suppression of riots or for the protection of the public in any way desirable where it is probable that the local force will not be strong enough. Four times since the force was organized has it been called upon for the suppression of riot. The fact that they have been called out in case of riot only four times in the 13 years since they were organized shows that this service is not common. But they are frequently in requisition for large gatherings, where the local constables or police will not be sufficient.

The California wine cellars are overstocked, and, consequently, grapes are sold for one-third of the price four years ago. The San Francisco dealers have nearly 12,000,000 gallons stored in their vaults, and it is estimated that the producers have from 50,000,000 to 60,000,000 gallons on hand, and are making from 20,000,000 to 25,000,000 gallons each year. At 20 cents a gallon, a low figure for ordinary sales, this would represent from \$12,400,000 to \$14,400,000 locked up in the wine casks of California.

Of three cases brought before Judge Trusdell at Trenton, N. J., to test the new 55-hour law, two were decided in favor of the inspector and one against him. In his opinion Judge Trusdell says that 55 hours constitute a week's work and designates the hours in which the work shall be performed.

While the owners of iron mines in the older of the Lake Superior ranges are shutting them down because they are unable to take out ore at a profit at the present prices of ore, arrangements are being made to push the opening of the new mines on the Mesaba range, north of Duluth. Messrs. Barker and Bates, acting for H. W. Oliver, Jr., of Pittsburgh, have just concluded the contract for the lease of the mine of the Mesaba Mountain Iron Company, and the lease will be signed as soon as the stockholders of the company ratify it, which will be within a few days. The lease is made at a royalty of 65 cents a ton and the lessees agree to take out a minimum of 400,000 tons a year. Mr. Oliver and Messrs. Barber and Bates are also interested in the lease of the Big Cincinnati Mine and in one or two of the other new properties. It is now said that ore from the new range will be shipped by September 1 or within ten days after that. Both of the new railroads to the range are nearly completed.

The Northwestern Plow Association held its annual meeting at the Grand Pacific Hotel, in Chicago, on the 11th inst., when the following officers were elected: D. C. Smith of the Pekin Supply Company, president; D. R. Phelps of the Weir Plow Company, vice-president; C. W. Mitchell of the Norwegian Plow Company, Du-buque, secretary and treasurer.

The Iron Age

New York, Thursday, August 18, 1892.

DAVID WILLIAMS, - - - PUBLISHER AND PROPRIETOR.
CHAS. KIRCHHOFF, - - - EDITOR.
GEO. W. COPE, - - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS, - - - HARDWARE EDITOR.
JOHN S. KING, - - - BUSINESS MANAGER.

The Day of Small Margins.

There has probably never been a time when profits were smaller in the manufacture of staple goods. Competition has forced prices so low that with many establishments the margin maintained above cost is extremely narrow. Economies of all kinds have been instituted, expenses have been forced down wherever possible, improved methods have been eagerly introduced when but a slight saving of labor is promised; but in almost every case the buyer gets the benefit of the reduced cost in a reduced price. It is a rather curious fact that this condition should extend itself beyond the manufacturer to the jobber and distributor of goods, but it seems to be an inexorable law governing the handling of staple articles. To such an extent has this lowering of prices by distributing agencies been carried that in many cases during the past two years jobbers have barely recouped themselves for the cost of shipping such goods in and out of their warehouses.

The encroachment of manufacturers on the trade once exclusively in the hands of jobbers is to some extent the cause of this condition of affairs, but it is not the only reason. Competition is as keen among jobbers themselves as among the manufacturers, and instances are frequent in which these large merchants have seemed willing to carry on business merely for the sake of being in the trade. Those who seek to overcome this wretched method of doing business see no remedy except in securing a much larger volume of trade, by which their small profits may be so multiplied by numerous transactions that the net revenue would be fairly satisfactory. This, however, is a course which is not open to everybody, because it involves the use of more capital, and the aggravating question comes up, Where is the additional capital to come from? Expansion of trade if done recklessly is almost sure to result in financial shipwreck. The expedient of engaging in outside lines of business which promise greater profit than staple goods has been tried by numerous houses, but they have found that the better margins in such lines are due to the limited trade and to special circumstances involving higher cost either in handling goods or in selling them.

With the condition of their business in such a state, manufacturers seem to be in a better position than jobbers. There are more expedients open to them. An enterprising, progressive and thoroughly alive manufacturer is continually planning to reduce cost, and unless he is badly ham-

pered by lack of capital or an unfortunate location, he will find a way in which to accomplish his purpose. When the problem is resolutely attacked, its satisfactory solution is often a matter of surprise to the manufacturer himself. What appears to be an impervious wall fencing him in and restricting him to a rigid set of items in making up cost gives way before his careful study of the situation. Manufacturers, it is true, have time and again protested that they were being forced to sell their products below cost, and individuals are really known to have done so, but taking an entire branch of manufacture throughout, and the majority in it have always been able to more than make both ends meet. Jobbers and distributors, however, are not so well situated. They cannot cut down expenses, because as soon as they do so they cripple their facilities for doing business, and their revenues diminish. They cannot consolidate, because they do not control any special trade which would make the acquisition of their business desirable to a competitor. The only remedy would seem to be the cultivation of a better feeling among themselves and the establishment of an understanding with one another that staple goods were to be sold at a reasonable profit. The present course of procedure may in time close up small houses or force firms to suspend which are not strongly equipped financially, but in the process of "weeding out" everybody in the trade suffers to some extent. It is bad policy to look forward to next year or the year after for profitable business. There should be good profits now.

The Lake Superior charcoal pig iron trade has been depressed so long that many manufacturers are exceedingly discouraged. The large stocks held by the various furnace companies are certainly menacing, and would seem to form a very practical argument against expectations of improvement. Yet there is some promise of a brighter day even now, when everything seems so forbidding. The makers of malleable castings, who consume such a large part of the output of the Lake Superior charcoal furnaces, have entered upon a most prosperous season. They are heavily loaded with contracts from manufacturers of agricultural implements, and it is a rare circumstance to find one in a position to receive further orders. In placing contracts for pig iron it is quite common for the malleable manufacturers to express the opinion that they will probably need considerably more iron, but they do not see the necessity for purchasing very far ahead, as the price has maintained a steady downward tendency for the past two years. They ignore the fact that they have almost without exception increased the capacity of their foundries very considerably during that time, some of them having more than doubled. Coke iron can be used for their purposes to a limited extent only, and as their main reliance is on Lake Superior charcoal, the furnacemen are inclined to

believe that the increased consumption of this material will have a perceptible effect on stocks during the next few months. The claim is made, but it is perhaps a little too strong, that the malleable works alone could absorb the entire output of the Lake Superior charcoal furnaces during the coming year, leaving wholly out of the calculation the car wheel foundries, plow factories and miscellaneous consumers, who have thus far used a considerable percentage of the output. It is, nevertheless, rather a significant fact that most of the leading furnace companies have now sold their product as far ahead as they deem prudent at the low prices prevailing.

The Maturing Crops.

The season is so far advanced that the probable yield of the wheat crop may be estimated with some degree of accuracy, and corn prospects can be predicted more definitely, though in regard to the latter, the late planting causes more exposure to damage from early frosts. For obvious reasons, the Government report for August was awaited with special interest, and its effect upon the grain market was immediately perceived. The returns show a slight improvement in the condition of corn, raising the monthly average from 81.1 per cent. in July to 82.5 per cent. in August. In only four years since the initiation of crop reporting has there been a lower August condition. There was a slight improvement in the States north of the Ohio, and a greater advance in States west of the Mississippi, except Kansas and Nebraska. The condition of spring wheat declined a fraction to 87.3. Despite this drawback market prices have receded, evidently reflecting the more promising outlook as respects the entire field. According to the computation of the Produce Exchange there is indicated a yield of about 169,000,000 bushels. Add 345,000,000 bushels, the latest estimate for winter wheat, and we have an aggregate wheat crop of about 514,000,000 bushels, against 611,780,000 bushels, the unprecedented yield of last year. There is much collateral evidence to support a hopeful view, both as to wheat and corn, although farmers in very few localities have the assurance to predict for the current year a crop equal to the last. In California, for example, our advices as late as August 3 say: "The wheat crop is now stated to be larger than that of last year, but not of as good a quality." The Minneapolis *Market Record* estimates the spring wheat yield in Minnesota and the two Dakotas at 130,000,000 bushels, against 160,000,000 last year. Other estimates run from 100,000,000 to 125,000,000. In regard to corn, Vice-President Reinhart of the Atchison, Topeka & Santa Fé Railroad wires to his correspondent East as follows: "Throughout the entire season the weather has been peculiarly favorable for corn in Kansas. The heavy rains now positively assure a crop of about 200,000,000 bushels of corn." The figures on South Dakota's prospective yield are simply astounding, ranging from

50,000,000 to 60,000,000 bushels of wheat, besides immense quantities of other grains. These later advices, following so speedily the alarming statements telegraphed from the grain regions, evidently for speculative purposes, are well calculated to dispel all fears respecting the forthcoming crops. Making due allowance for possible contingencies, the outlook is assuring, and the effect on prices weakening. In regard to cotton, although there is a reported decline from an average of 86.9 in June to 82.3 at the close of July, the indicated shrinkage can be borne without repining after the phenomenal production of last season. There is no room for question that the yield of all the leading States, added to the surplus of 1891, will suffice to meet all requirements. The most immediate effect, aside from renewed supplies of cash in the channels of trade and remunerative business for the railroads, will be a timely supply of grain and cotton bills for shipment to Europe in lieu of gold, to offset the recent enormous importations of merchandise—equal to \$46,000,000 during July at this port alone.

The Tin-Plate Makers vs. Jobbers.

American tin-plate manufacturers are needlessly antagonizing the great jobbing houses. They are doing this by making sales of small quantities to consumers or small merchants at the same prices asked for carload lots. When the manufacture of tin plates was started on this side of the Atlantic, and a box of American tin plate was regarded as a curiosity, the sale of small lots by the makers was a natural condition of trade. In fact, large lots were not to be had at that time, no matter how desirous a jobber might be to carry a stock of American tin plates. But now the conditions are different. American tin plates are becoming a recognized feature of the tin-plate trade, and enough concerns are making them to enable jobbers to carry stocks. The output is also increasing so steadily that the manufacturers will at an early day find it to their advantage to use established channels of distribution in effecting sales. An output of 200 to 300 boxes per week can be easily disposed of in a limited territory by a manufacturer himself, but the sale of 1000 or more boxes per week is a different matter. The jobber may then form a very desirable link in the chain which stretches from the manufacturer to the consumer.

If manufacturers are actuated by any feeling against jobbers because of supposed unfriendliness to American tin plates, they should dismiss it from their minds. Sentiment should not be permitted to interfere with business. There is not a jobber between the Atlantic and Pacific oceans so prejudiced that he will refuse to handle American tin plates if he can buy them of as good quality and at as low a price as the foreign article. He has a demand for them from his customers who are disposed to test them thoroughly, to see whether the home-made product is as good as that brought from Wales. If, however, jobbers find that their customers

are being sought by the manufacturers direct, an antagonism will be provoked which ought not to exist. Jobbers will then turn to the imported article in self-defense and push its sale much harder than they have latterly been disposed to do. At this particular juncture the attitude of the manufacturers should be conciliatory. They need all the friends they can make. It is possible to build up a strong friendly sentiment among the great jobbing houses of the country which will count heavily in the widespread introduction and consumption of tin plates. The contrary policy may be preferable to those who are inclined to be pugnacious, but it is hardly business like.

Illustrations of possibilities in the way of cheap railroad fares next year are now being given in the West. The railroads running between Chicago and Denver, a distance of about 1200 miles, carried passengers on the occasion of the Knights Templars triennial conclave in the latter city for \$12 for the round trip, or a half cent per mile. The roads did an enormous business, and those who led in the movement to make reduced rates claim that it was quite profitable. A rate of \$5 for the round trip is now announced between Chicago and Kansas City for the Knights of Pythias convention in the latter city. As the distance is about 450 miles, this is a little over half a cent per mile. The distance from New York to Chicago is a little less than 1000 miles. With a corresponding reduction in rates, round-trip tickets should be sold between these cities at \$10. Such a rate seems reasonably expected during the World's Fair. If the Western roads are able to make money at half a cent per mile, surely the Eastern roads can do so with the enormous traffic which such low rates would encourage. Although the Eastern roads are endeavoring to make an ironclad agreement with one another over a minimum rate for next year's business, it is not believed that all of them will adhere to it. Low rates are, of course, greatly desired by the management of the fair, as they would insure a much larger attendance, and upon that the success of the fair depends.

It is noteworthy that gray forge pig iron is not always better adapted for puddling than for melting in the cupola. A well-known Southern brand of iron, which proved to be of indifferent quality for puddling, has made an excellent reputation itself as a foundry iron. It contained too much silicon, the gray forge grade running over 2 per cent. On practical test, in mixture with No. 2 Northern coke pig iron, it was found to work admirably, making a soft, strong casting at, of course, considerably lower cost than when better grades of iron are used.

The opinion is expressed that next year more Europeans will visit this country than ever before, and that the World's Fair, together with the Presidential election, will cause an unprecedented amount of travel.

OBITUARY.

JOHN A. PRICE.

Col. John A. Price, vice-president of the National Board of Trade of Scranton, Pa., and a member of the State Commission for the Equalization of Taxes, died Tuesday night, 2d inst., aged 50 years. He was born in Covington, N. J. He was recently appointed a commissioner to an International Trade Congress connected with the World's Fair. He was devoted to the mechanical arts, having taken out nearly 100 patents, and was a member of the Society of Inventors, of the Irish Academy, of the American Society of Mechanical Engineers, of the International Geographical Society and of the American Institute of Mining Engineers.

C. D. FRANK.

C. D. Franke, senior member of the firm of C. D. Franke & Co., Charleston, S. C., died on the 9th ult. in the sixty-seventh year of his age. In a circular relating to the matter it is stated that the death of Mr. Franke will cause no interruption to the business, which will be continued by E. H. Jahnz and J. H. Jahnz under the old firm name. E. H. Jahnz has been for eight years the junior member of the firm and manager of the business, and his brother, J. H. Jahnz, has for 12 years been connected with the house successively as clerk, salesman and assistant manager.

CLINTON S. INGRAHAM.

By a most lamentable mistake, on the night of the 6th inst., Clinton S. Ingraham swallowed a quantity of carbolic acid and died before relief could be administered. Mr. Ingraham was superintendent of the Chicago Horse Shoe Company, of East Chicago, Ind., and had but a few days before his death started the works in successful operation. He was a most ingenious mechanic, and had devised all the special machines used in the works. Under his management the California Horse Shoe Company at San Francisco attained their success. His father is a leading farmer with large stock farms and vineyards near Mantec, Cal. Mr. Ingraham was but 35 years old and leaves a widow and child, who were expected from San Francisco this week, with their household goods, to rejoin him in East Chicago. Death is never welcome, but in this case the dread destroyer's appearance was most untimely. A young man of brilliant achievements and of still greater promise has been taken away just when his talents and his eminent business capacity were most needed in the starting of a new enterprise.

H. A. TERRY.

H. A. Terry, manager of the Russel & Erwin Manufacturing Company in Philadelphia, died at Atlantic City, N. J., of heart disease on the 8th inst. Mr. Terry was 51 years old and resided at 3714 Hamilton street, Philadelphia.

THOMAS D. STICHTER.

Thomas D. Stichter, Reading, Pa., died at his residence, July 24, of heart failure. Mr. Stichter was born in 1846, and after receiving a liberal education took a position in his father's hardware store; and was afterward admitted as partner, the firm becoming J. L. Stichter & Son. Upon his father's death a few years ago he took sole charge of the business, retaining the old firm name, and has conducted it successfully ever since. He was regarded as an excellent business man, and his standing was very high, both in business and socially. He was a director and one of the founders of the Second National Bank, treasurer of the Reading Benevolent Society, and was also an active supporter of other charitable institutions.

The New Iron Scale.

The principal features of the new scale agreed to by the conference committees of the Pittsburgh iron manufacturers and the Amalgamated Association are summarized in the following. Two paragraphs have been added to the memorandum of agreement:

4. Wherever deviations from the Western Iron Scale signed for by any manufacturer and the Amalgamated Association are made, and evidence is produced to prove it, the Amalgamated Association agrees to make every effort to correct the same, providing the trains and furnaces are similar. But if the deviations continue to be tolerated by the Amalgamated Association all other mills shall receive the same. All manufacturers signing this scale hereby agree not to make any deviations from the scale agreed to.

5. That mills may make three turns in 24 hours, when practicable.

The puddling scale remains unchanged at \$5.50 per ton at a 2-cent card, advancing 10 cents per ton for every one-tenth rise in the card price. In the notes No. 14 now reads as follows:

Where pot metal or stove plate is worked alone or mixed 50 cents per ton extra shall be paid, but if stove plate or pot metal to the extent of 100 pounds or less is worked with pig metal no extra shall be paid.

The muck and puddle mill remains at one-eighth of the base price, or 68½ cents a ton. This is for muck rolling on trains of two pairs with all the old regulations. The scrapping and busheling scale in the muck and puddle mill is not affected, but the scrapping and busheling in other mills is touched by the reduction. Where this labor was formerly paid for at the rate of \$2 for a ton of 2240 pounds at the 2-cent card rate, but \$1.80 will be paid now.

Next is the knobbling scale. Knobblers instead of receiving \$4.70 a ton for scrap will get \$4.23. On refined iron, where they received \$6.11 before, but \$5.50 will be paid now.

For heating slabs and shingling, where 75 cents a ton was paid formerly, on muck and rehammered iron, 67½ cents will be paid; 74½ cents instead of 82½ for shingling charcoal iron, and 67½ cents for shingling slabs and doubling.

On bar and nail plate mills, where 70 cents a ton was paid before, the pay is cut down to 63 cents. The extras remain unchanged, except that the following is expunged from note 2: "That all sizes weighing less than 2½ pounds per lineal foot, not less than an average turn's work be paid, this not to include skelp iron."

Under the reduction the following prices will prevail on guide, 10-inch, hoop and cotton tie mills: Rolling, \$1.30½; heating, 65½ cents; roughing and catching, 32 3-5 cents. The price on the various sizes will be reduced by 10 per cent. all through. The prices indicated above hold good for nut iron, channel iron, T iron, angles, clip and wagon strap iron and hame iron. The old extras remain in force, except that the following has been dropped:

2. Four hundred and ten bundles of cotton tie shall constitute a day's work for every turn in the week on a three-turn mill, except Saturday, and for Saturday 325 bundles of cotton tie shall constitute a day's work. For mills working double turn 475 bundles shall constitute a day's work every day in the week, except Saturday, and for Saturday 400 bundles shall constitute a day's work.

In the plate and tank mill scale the rolling is reduced from 72 to 60 cents, the heating remaining 80 cents. The clause that the roller pay no one has been stricken out.

The sheet mill scale was agreed upon some time since, and has been printed in *The Iron Age*.

Following are the scales of the structural mills under the reduction:

Twenty-Inch Mill.

	Price per ton, 2240 pounds.
	Cents.
Heater.....	63
Roller.....	63
Catcher.....	39.4
Heater's helpers, each—front.....	17
Heater's helpers, each—back.....	15.3
Pilers, each.....	15.3
Chargers, each.....	6.3
Shearman.....	7.88
Run out hook—front.....	8.1
Rough and tumble hook—front.....	8.1
Point in hook—front.....	8.1
Point in hook—back.....	8.1
All other hooks, each.....	7.6
Buggyman.....	9
Straighteners, each.....	8.5
Sawman.....	8.5
Ten per cent. to be deducted from all unfinished iron for crops.	

Eighteen-Inch Mill.

	Price per ton, 2240 pounds.
	Cents.
Heater.....	63
Roller.....	63
Catcher.....	39.3
Heater's helper (paid for output of two furnaces).....	12.2
Pilers and chargers, each.....	10.8
Buggyman.....	11.3
Hookers, each—front.....	11.3
Hookers, each—back.....	10.8
First straighteners, each.....	11.3
Second straighteners, each.....	10.8
Shearman.....	19.8
Ten per cent. to be deducted from all unfinished iron for crops.	

Scrap, or Top and Bottom Mill.

	Price per ton, 2240 pounds.
	Cents.
Roller.....	49.5
Heating, gas furnaces.....	45
Heater's helpers, each (paid for output of furnaces).....	10.8
Chargers, each (paid for output of furnaces).....	8.1
Buggyman, one furnace, 10 cents; all other furnaces.....	10.3
Hookers on roller's side.....	9
Hookers on catcher's side.....	8.1

Large Universal Plate Mill.

	Finished iron. Per ton, 2240 pounds.	Unfinished iron. Per ton, 2240 pounds.
	Cents.	Cents.
Roller.....	47.25	47.25
Screw down.....	15.75	11.7
Straighteners (4), each.....	12.6	9
Sweeper, per day.....	90	82
Heater.....	86.4
Heater's helpers, each (paid by heater).....	18	18
Shearman (pays his help).....	58.5	58.5
Pilers and chargers, each.....	13.5	13.5

Small Universal Plate Mill.

	Finished iron. Per ton, 2240 lbs.	Unfinished iron. Per ton, 2240 lbs.
	Cents.	Cents.
Roller (pays no one).....	47.25	47.25
Heater.....	63	56.6
Heater's helpers, each.....	24.3	21.6
Shearman (pays his own help).....	67.5	67.5
Straighteners, each.....	12.6	9
Pilers and chargers, each.....	18	18
Screwdown.....	16.2	13.5

The scales for continuous trains follow:

Rolling on Continuous Trains.

	Per ton. Cents.
¾ and 9-16 squares.....	90

Reheating on Continuous Trains.

	Per ton. Cents.
9-16 and ¾ inch.....	49.5
¾ and 7-16 inch.....	56.25
5-16 inch.....	76.5

Large Mills.

	Per ton. Cents.
Heating.....	63

Sixteen-inch Trains.

	Per ton. Cents.
Roughing.....	13
Catching.....	12.1

The following named firms were represented at the various meetings held between the conference committees of the Pittsburgh manufacturers and the Amalgamated Association: Jones & Laughlins, Limited, Oliver Iron & Steel Company, J. Painter's Sons Company, Lockhart Iron & Steel Company, Phillips, Nimick & Co., Lindsay & McCutcheon, Keystone Rolling Mill Co., Zug & Co., Limited, A. M. Byers & Co., Brown & Co., Incorporated, Moor-

head-McCleane Company, Spang, Chalfant & Co., Pittsburgh Forge & Iron Company. The above named firms agree to operate their mills and pay wages called for in the scale as agreed upon at the meeting held in Pittsburgh on Wednesday, the 10th inst. On Thursday of this week a meeting between the committees of the Pittsburgh manufacturers and the Amalgamated Association will be held in Pittsburgh, at which the revised scale will be submitted by the Amalgamated Association, and if approved and found to be correct will be signed in conference for the above firms. Pending the signing of the scale a number of concerns have put their mills in operation and others are preparing to start up just as soon as possible. Among those who started up on Monday morning last were the Lockhart Iron & Steel Company, Zug & Co., Moorhead-McCleane Company and J. Painter's Sons Company. The Monongahela Iron & Steel Company, whose plant is located at Hay's Station on the Pittsburgh & Lake Erie Railroad, signed the scale last week. They make muck bar only, having an annual capacity of 15,000 net tons.

The Jobbing Mill Scale.

In *The Iron Age* of August 4 we made mention of the fact that all firms operating jobbing mills would arrange a settlement with their employees as to prices to be paid for rolling plates in sheet mills. At a meeting held in Pittsburgh on Saturday, the 13th inst. between John Jarrett, secretary of the Iron and Steel Sheet Manufacturers' Association, and Wm. Weihe and M. M. Garland of the Amalgamated Association a scale was arranged. In the old scale jobbing mills rolling No. 8 and heavier paid \$3.60 per ton of 2240 pounds on a 2-cent card. For Nos. 9 and 10 \$4 was paid. This scale has been rearranged and the following was adopted:

Sheet Mill.

It is agreed that at a 2-cent Western Iron Association's card the prices for rolling on a sheet and jobbing mill shall be as follows, with 2 per cent. additional for each one-tenth advance of said card and 2 per cent. decline for each deduction of one-tenth from said card:

	Price for rolling on a 2-cent card, per ton, 2240 lbs.
Gauges.	
No. 8 and heavier.....	\$3.00
Nos. 9 and 10.....	3.50
No. 11.....	4.00
Nos. 12 to 14.....	4.80
Nos. 15 to 17.....	5.60
Nos. 18 to 21.....	6.80
Nos. 22 to 24.....	8.00
Nos. 25 and 26.....	8.80
No. 27.....	9.60
No. 28.....	10.40
No. 29.....	11.20
No. 30.....	12.00

The following concerns are affected by the changes made as noted above: Shoenberger & Co., Pittsburgh, Pa.; Aetna Iron & Steel Company, Bridgeport, Ohio; Standard Iron Company, Bridgeport, Ohio; Sharon Iron Company, Limited, Sharon, Pa., and Mahoning Valley Iron Company, Youngstown, Ohio. In connection with the above scale it should be noted that this agreement was arrived at between Mr. Jarrett, representing the Iron and Steel Manufacturers' Association, and the officials of the Amalgamated Association. Before it becomes effective it will have to be agreed to by the concerns affected, which are given above. It is not expected, however, that any objections will be made to the scale as agreed upon between Mr. Jarrett and the Amalgamated officials.

The city of Detroit has just ordered a fire boat to cost \$35,000, which will throw a 4½-inch stream to the height of 160 or 170 feet, and which is promised to be the finest in the country. Nearly all the lake ports own one or two boats of this kind.

Washington News.

(From Our Regular Correspondent.)

WASHINGTON, D. C., August 15, 1892.

At the Navy Department the Bureaus of Construction, Steam Engineering and Ordnance are making preparations for the new work proposed under the Naval Appropriation bill. It is intimated by the experts in these branches of the naval service that important advances have been made in designs and results, but at present they are not prepared to go into particulars, as they have not entirely passed what might be termed the theoretical stage of their work.

There is no doubt that the new navy of the United States will always be an object of wonder and subject of interesting and instructive study to the naval shipbuilding nations of the world. Contemplating the marvelous and quick strides made in this complicated mechanical art, from the simple cruisers built by Roach up to the culmination of offensive and defensive naval constructions embodied in the Columbia or Pirate just launched at the Cramps, or the enormous battleship New York, the foremost rank in naval shipbuilding has been reached in less than a decade. The superiority of any of the ships of the American model over the Texas, built on English designs and details, is now conceded by English authorities. In actual sea service the Texas will be of little service. Her career from present indications will be one of harbor or coast defense, for which much less expensive craft would answer.

The Bureau of Construction, under Chief Wilton and Assistant Hickborn, are already preparing to take up the matter of designs for the new ships authorized. They have already in hand their speculative drawings, but now that the ships are authorized they wish to get their drawings and specifications in shape so that advertisements can be prepared inviting proposals for their construction.

In the Bureau of Steam Engineering Chief Melville and Assistant Towne are already at work preparing new designs and improvements on the different parts of engines. They have in sight some plans of this character which are not only new and novel, but produce better results in certain directions than by methods hitherto applied.

The same activity and enterprise is being displayed in the Ordnance Bureau under Commodore Folger. His work in ordnance advancement is recognized not only in the United States but in the world at large. American high-power guns, like American hulls and engines, now take the lead.

It is expected that the year will bring out some improvements in naval ships which will be even more wonderful than in the past.

Plans for placing the magnificent steamers of the Inman Line under the American flag are being perfected. President Griscom, who has just returned from England, said that the enlargement of the company's fleet will depend upon the action of the United States Post Office Department in awarding the contract for carrying the mails. The tenders for that privilege will be opened September 5, and should the contract be awarded to the International Steamship Company work will be begun at once on the plans for the additional vessels. Mr. Griscom entertains no doubt but that American shipbuilders will be able to construct steamships equal in every respect to those built in foreign yards.

The S. Obermayer Company of Cincinnati, have just brought out a new geared foundry ladle.

The Steel Scale Signed.

(By Telegraph.)

After a number of conferences held during the past six weeks between Jones & Laughlins, Limited, of the American Iron & Steel Works, Pittsburgh, and their employees, a steel wage scale was agreed upon and signed by the firm on Tuesday night at 5 o'clock. The scale as prepared by the firm was accepted by the men. All repairs to the plant having been completed, every department was put in full operation Wednesday morning, the 17th inst. Jones & Laughlins are the largest manufacturers of Billets in this country, having a weekly capacity of over 5000 tons, and give employment to over 3000 men.

Rolling Mill Wages.

A week since A. R. Whitney of New York, president of the Portage Iron Company, Limited, Duncansville, Pa., sent to the *Evening Post* a statement of the wages earned in his mill. This led the Clerk of the House of Representatives to forward the following communication to the newspaper named:

In your issue last Saturday you printed a list of wages paid by A. R. Whitney which gives the average net per day for rollers and heaters. Now if you will get Mr. Whitney to state the average number of days in the year which these men work, and also the average number of years in which such employees are able to work by virtue of the character of their employment, the "comment will be very much more appropriate" and the public will be better able to judge whether the wages are so very high. Will you also explain why the roller on cotton ties and steel hoops received so much higher net wages (\$29.85) than rollers in the other departments? This does not agree at all with the report of the Commissioners of Labor or any other reports I have ever seen.

Mr. Whitney replied as follows:

Replying to the letter received by you from the Clerk of the House of Representatives, we herewith inclose you a memorandum showing the number of days worked and the amount earned each day on each of our finishing mills from July 1, 1891, to July 1, 1892. You will note that the roller on the 7-inch mill only made 134 days. This is explained by the reason that the 10-inch hoop mill roller handled the product of the two furnaces on the 10-inch mill for six months of the year. The reason why the rollers on cotton ties made more money than the other finishing mills is because they have a higher rate of wages per ton and are able to turn out a much larger tonnage on account of the product being rolled out of steel. This also applies to steel hoop as rolled on the 10-inch mill, with this exception, that about 50 per cent. more tonnage in the same time is produced on steel hoop over and above cotton ties, which makes the roller's wages on that mill average \$29.85 per day for the whole year. As to the average number of years in which such employees are able to work at this class of employment, our answer is that as this work is not so laborious or trying as most other occupations in a rolling mill they ought to live to a good old age.

Average Wages Paid to Rollers and Heaters from July 1, 1891, to July 1, 1892.

8-inch guide mill.		
Paid net to roller, 290 days.	\$13.97	\$4,051.30
Paid net to heaters, 290 days.	7.20	2,088.00
15-inch bar mill.		
Paid net to roller, 288 days.	7.22	2,079.36
Paid net to heaters, 288 days.	5.85	1,684.80
7-inch hoop mill.		
Paid net to roller on cotton ties, 107 days.	15.10	1,615.70
Paid net to roller on guide iron, 27 days.	14.04	379.08
Paid net to heaters on cotton ties, 242 days.	8.15	1,972.30
Paid net to heaters on guide iron, 27 days.	7.04	190.08
10-inch hoop mill.		
Paid net to roller on cotton ties and steel hoop, 270 days.	29.85	8,065.50
Paid net to heaters on cotton ties and steel hoop, 270 days.	9.18	2,478.60

The Homestead Trouble.

Events at the Homestead Steel Works since our issue of last week have been of an ordinary character. The firm are making considerable progress from day to day in securing men to operate the plant, and at this writing over 1700 men are at work. The new men that are now being received are selected with great care, and those who do not come up to the requirements are not given employment. The steamer Tide continues to make trips daily from Pittsburgh to Homestead, and on each trip anywhere from 10 to 50 men are taken up. On Friday of last week the 40-inch mill was started up with an entirely new crew. General-Superintendent Potter states that while the workmen were a little slow, the class of material turned out was very satisfactory, and that in a very short time the new men will be fully as competent, or more so, than the old workmen. The same state of affairs exists at the Upper Union Mills in Pittsburgh as at the Homestead Steel Works. While a sufficient number of men could be put to work at any time to operate the mill in all departments double turn, the firm have adopted the plan of employing only the very best workmen, and for this reason the work of equipping the mill is necessarily slow. On Monday of this week all departments of the Upper Union Mills were in full operation on single turn, while two trains were being operated double turn. But little attention is being given to the Lower Union Mills by the firm, and it is their intention to have a full complement of men both at the Upper Union Mills and at Homestead before the work of securing them for the Lower Union Mills is taken up. A break among the strikers of the Upper Union Mills at any day is probable. As is already known, the Amalgamated Association has conceded the manufacturers a reduction of 10 per cent. in the finishing department. The action of the Amalgamated Association in doing this has placed the strikers, who are also members of that organization, in a very queer position. A scale of wages was made public by the Carnegie Steel Company, Limited, last week, which will continue in force until December 31, 1893. From it we learn that the firm have not made any reductions except in one or two instances in any part of the scale, but have agreed to pay wages as called for by the Amalgamated Association scale, which they had signed before the men went out on strike. As all other mills in Pittsburgh and other Western districts will be operated on a scale calling for wages 10 per cent. lower than are paid at the Upper Union Mills, the question naturally arises, What will the men do about it? In answer to this we can state that it is the general impression that the strike at the Upper Union Mills will be declared off during this week and the men return to work. If this is the case, this mill will be known in Amalgamated Association circles as a "non-union" mill. By this term is meant a mill where the Amalgamated Association is not recognized by the owners, but where members of the Amalgamated Association are allowed to work and still retain their membership in that organization. A "non-union" mill differs from a "black-sheep" mill in the fact that in a "black-sheep" mill no member of the Amalgamated Association is allowed to work, nor can any men working in a "black-sheep" mill become members of that organization.

On Friday of last week the Executive Council of the American Federation of Labor after an all-day session announced that no boycott would be placed on any of the products of the Carnegie Steel Company, Limited. The reason given out for this

decision is that the quantity of the material turned out and the character of it is not of that standard that makes a boycott necessary. It is the general impression that the Executive Council of the American Federation of Labor after a thorough investigation decided that to place a boycott upon the manufactures of the Carnegie Steel Company, Limited, would make them liable to the laws on a charge of conspiracy. In addition to this it is believed that the progress made by the Carnegie Steel Company, Limited, in operating their Homestead Steel Works had the effect of impressing upon the members of the council the fact that the strike was so nearly ended that it was useless to resort to a boycott.

The strikers at the Homestead Steel Works have recently issued an appeal in the form of a circular, of which the following is a copy:

You are requested not to work up the material that may be shipped from the works of the Carnegie Steel Company during the present strike. By so doing you will help us to gain a victory in our present struggle for organization.

Copies of the above circular are being sent to workmen all over the United States.

(By Telegraph.)

Matters at Homestead are progressing nicely, and on Tuesday over 1850 men were at work. The Bessemer department, which was started on Monday morning, has been put on double turn. Nearly all departments of the Upper Union Mills are also on double turn. The Lower Union Mills will probably be started up on Monday morning, the 22d.

The Suffield & Thompsonville Bridge Company, lately organized at Thompsonville, Conn., have called for plans and estimates for a bridge over the Connecticut River 1060 feet long. Sixty-nine bids were received from 14 different bridge companies, and, after careful consideration, acting upon the advice of their engineer, Edward S. Shaw of Boston, the company have placed the contract for the bridge with the Berlin Iron Bridge Company of East Berlin, Conn. It will consist of five spans of 210 feet each, with a roadway 20 feet wide in the clear, and will cost \$60,000.

The depression prevailing in Australia, industrial and financial, is described as without a precedent. Everywhere is seen a lack of confidence which paralyzes effort, and, as a result, the city of Melbourne is full of unemployed. The attitude of labor—the one great obstacle in the way of Australian progress—is also alarming. At Broken Hill, the great silver district of Australia, all the mines are shut down and all the miners, over 5000 in number, are out on strike; the unions refuse any concessions in the prices of work, and disorders in all trades are feared.

The declining value of silver is felt acutely in the East India trade, and in the British cotton industries. In London there is a growing business, attributed to the expectation that the silver act of 1890, passed by the American Congress, will be repealed. The United States Treasurer on Friday, 12th inst., paid for silver \$0.8293, which is the lowest at which the Government has ever bought. The highest ever paid was \$1.2025, which was in August, 1890, shortly after the passage of the present bullion act.

The South Pittsburgh furnaces of the Tennessee Coal, Iron and Railroad Company have been banked, as the result of the rioting at the Tennessee collieries of the company.

MANUFACTURING.

Iron and Steel.

The Union Iron & Steel Company of Youngstown, Ohio, advise us that the report that they would remove their Warren mill from Warren, Ohio, to Youngstown, Ohio, is without foundation.

The Brown-Bonell Iron Company of Youngstown, Ohio, manufacturers of refined iron bars, sheets, plates, &c., are making a number of extensive improvements to their plants. New water mains for better fire protection are being built, and two new heating furnaces with boilers are being erected in the 12-inch mill. In the hoop mill one new heating furnace is being put up, which will also have boiler attached for the purpose of utilizing waste heat. In addition to the above, the firm will change all the puddling furnaces in No. 1 mill from single to double furnaces and will place boilers over all of them for utilizing waste steam.

The Isabella Furnace Company of Pittsburgh, operating three furnaces at Etna, Pa., have banked down two stacks for an indefinite period. The firm assigns as a reason for this action that they have a large amount of iron on hand and decided to restrict their output until a decided improvement has taken place in the iron market.

At the Edgar Thomson blast furnace plant at Braddock, Pa., owned and operated by the Carnegie Steel Company, Limited, of Pittsburgh, seven stack out of nine are running on Bessemer iron, one is turning out spiegel and one stack is idle. At the Lucy Furnace plant in Pittsburgh operated by the same firm but one stack is in blast, the other being idle and will probably not resume for some time to come.

The Superior Steel Company of Pittsburgh, with a capital stock of \$100,000, was granted a charter last week. The incorporators are Harry J. Williams, Jas. H. Hammond, Geo. E. Sleeth of Pittsburgh; W. H. Black, Allegheny, and Jas. F. Robb, Scott Township.

As yet the Columbia Iron and Steel Company of Uniontown, Pa., manufacturers of structural material, have not arrived at a settlement with their workmen on the wage scale. Several conferences were held last week, but without avail. The firm have announced that unless a settlement is arrived at within a few days they will post the scale of wages as proposed by them and operate their mill with non-union men.

The Pittsburgh Rolled Axle Company of Pittsburgh have recently been incorporated, with a capital stock of \$350,000. Among the directors of the new concern are Jno. S. Mackintosh, Wilkins T. Williams and E. E. Slick. The last named gentleman claims that by the improved machinery which they control they will be able to roll car axles direct from iron or steel. A site for the erection of the plant will probably be selected within the next few days.

The Steubenville Furnace, at Steubenville, Ohio, operated by the Riverside Iron Works of Wheeling, W. Va., was blown out on Sunday, the 7th inst. During the stoppage the furnace will be relined, and will be put in blast again just as soon as the requirements of the firm make it necessary to do so.

The new trestle for handling ore at the Grace Furnace of the Brier Hill Iron and Coal Company, Youngstown, Ohio, which has been in course of construction for some months, was completed last week. The new trestle will accommodate 35,000 tons of ore, making the total capacity for the furnace for storing ore over 100,000 tons.

The new universal mill of the Central Iron Works, Harrisburg, Pa., is not yet in operation, but will probably be running in a month's time. Most of the machinery has been received and placed, including the electric traveling cranes, of which there are two, of 10 and 15 tons capacity respectively. These cranes are now in use, and are reported as being most efficient. The rest of the company's works are running full, although the recent sultry weather has necessarily caused some diminution in the amount of their output.

The pipe mills of Morris, Tasker & Co., Incorporated, at Newcastle, Del., were started on Monday, the 8th inst., after a shut down of six weeks for special repairs. All departments were put into operation.

We briefly noticed some time ago the projected extensions and improvements in the 112-inch plate mill of the Pottstown Iron Company of Pottstown, Pa. These have, we learn, been carried into effect, and the new fittings are now in full and satisfactory operation. They are said to afford the most perfect and unique system for handling heavy plates yet devised.

A building of brick and iron 145 feet long by 80 feet wide has been added to the original mill, giving it a total length of 600 feet, and making it one of the largest and most complete rolling mills in the country. The most important features in the new portion of the structure are the tables with geared rollers for the transmission and cooling of plates. There are two of these fittings; one of 203 feet, on which the plates are received after passing the finishing rolls, and transmitted to another return table 80 feet long. These tables are built in sections of 16 feet, each section containing 8 cast-iron rollers. During their passage along the first table after cooling, the plates are thoroughly examined for defects on their upper side. On arriving at the end of this table they are turned over and pushed on to the 80-foot return table by an ingenious arrangement of long arms and hydraulic jacks. Here the other side undergoes a similar minute examination, and the plates are marked for cutting to the desired size. At the end of the return table they are seized by a revolving crane composed of a central traverse bar working from the center to the circumference on a circular I beam. This crane transports the plates to the big trimming shears, from whence they are removed to the point of shipment as finished material. Arrangements are being made in this department for the introduction of steam loading gear. Other improvements are also being made in the 112-inch mill, including two large hydraulic charging and drawing cranes, for which the foundations have been put in, and which will shortly be placed. Five gas furnaces have also just been built, and three more are to be added before long. The Pottstown Iron Company's mills are running to full capacity, and we learn that present business with them is highly satisfactory, while prospects for the future, as far as can be foreseen, are promising.

Chancellor McSpadden has confirmed the sale of the furnace of the Talladega Iron and Steel Company, Talladega, Ala., to W. D. Parrish of New York City, and he, with R. L. Ivey of Talladega, will at once reorganize the furnace company, make extensive repairs on the plant, and put it in operation at an early day.

It is stated that the Bridgeport Steel Works Company of Chicago, Ill., contemplate the erection of a steel plant at Mobile, Ala.

J. Wood & Bros. Company are figuring on plans for two new sheet mills, which they have in contemplation to add to their rolling mill plant at Conshohocken, Pa. They report business as very satisfactory. Their works are running to full capacity to fill orders, and prospects for the fall and winter are most promising.

A successful record has, we are informed, marked the initial year of the Norristown Steel Company of Norristown, Pa. Their establishment is reported as being extremely full of work. A number of large contracts for the Government and other parties are in hand, while others are in prospect, which may be calculated to insure a continuance of the present condition of activity. The company have already been compelled to increase their facilities by the addition of 100 x 200 feet to the foundry, giving it a total length of 440 feet and making it one of the largest single foundry buildings in the country, if not the very largest, while nearly doubling its capacity. This alteration is being rapidly pushed to completion. There is ample space on the company's property for further extensions in this department. Among other recent additions to the plant are a new 30-ton Morgan electric traveling crane, and two open-hearth furnaces, each of 20 tons capacity. The Norristown Steel Company have just finished and shipped the turret tracks for the new battleships Texas and Amphitrite, which are fitting out at the Norfolk Navy Yard, Va. The gun carriages for the recently launched cruiser Columbia are now in hand and a number of these appliances for the other Government war vessels in course of construction. Some important contracts for steel castings of various descriptions for the navy yards at Washington and Norfolk are included in the Government work confided to this company.

The Elwood Steel Company of Elwood, Pa., composed of H. W. Hartman, chairman and capitalist, from Cleveland, Ohio, have awarded a contract to the Leeburg Foundry and Machine Company of Pittsburgh, Pa., for the erection of four complete 22-inch sheet mills. These four mills will be divided into two trains of rolls, each train consisting of four stands of rolls. The mills will be equipped with all the latest improvements and will be specially adapted for rolling heavy sheets. The same firm have also received a contract from the Cincinnati Rolling Mill Company of Cincinnati, Ohio, for the erection of two complete 22-inch sheet mills of heavy pattern. In addition they are furnishing all the machinery and mills for the

new tin plate plant now being erected by the Cumberland Steel and Tin Plate Company at Cumberland, Md. The mills and the greater part of the machinery will be shipped to Cumberland during the present week. The Leechburg Foundry and Machine Company have recently furnished a pickling machine of the Mesta design to the N. & G. Taylor Company of Philadelphia, Pa., and also one pickling machine of the same design to Marshall Bros. & Company, also of Philadelphia.

The entire plant of Jas. P. Witherow, engineer and contractor located at New Castle, Pa., will be offered at public sale on Saturday September 10, next, to the highest and best bidder. The reorganization scheme proposed by the creditors by which a committee representing the creditors would purchase this plant from Alex. Thomas assignee, and operate it in the interest of the creditors, was found impracticable. In view of this it has been decided to offer the plant at public sale on the date mentioned above.

It is reported that trouble over an ore contract, involving the delivery of 1300 tons daily, has led to the stoppage of three of the blast furnaces of the De Bardeleben Coal & Iron Company, at Bessemer, Ala.

The rod mill, wire-nail mill, Arethusa Iron Works and Etna mill at New Castle, Pa., have all resumed operations, the scales for the two latter mills having been signed on Saturday. The wire-nail mill starts with a greatly increased capacity, as a number of double machines were added during the shutdown. The machine shop that has been added to the works is the largest and best equipped in the city.

The Blandon Rolling Mill, at Blandon, Pa., now owned by S. Seyfert, has started up.

The Neponset Steel Casting Company has been organized at South Berwick, Maine, with \$25,000 capital stock. The officers are: President, T. Gogin of Boston; treasurer, A. A. Gage of Winsor, Mass.

The stockholders of the Springfield Brass Company, Springfield, Mass., have elected James Hale treasurer, to fill the vacancy caused by the resignation of W. D. Stevens.

The rolling mill of the Vulcan Iron Works, Richmond, Va., after having been shut down since July 1, has started up again with colored workmen, the white workmen having refused to accede to the reduction of wages.

The new frog and switch works and the new Letort Axle Works, both located at the Gettysburg Junction, Pa., are well under way and are to be ready for the machinery by September 1.

The strike in the Elmira Iron and Steel Rolling Mill, Elmira, N. Y., was declared off the 15th inst., after having been in force two years and two months. It was an unconditional surrender on the part of the Amalgamated Association.

The puddlers of Hooven's rolling mill at Norristown, Pa., have been granted an increase of 25 cents a ton over the rate now paid, making their wages hereafter \$3.75 per ton. The new schedule goes into effect at once.

For the past seven years the Jefferson Iron Works of Steubenville, Ohio, manufacturers of Jefferson steel nails, have operated their plant without the interference of any labor organization. During that time the firm have always been able to adjust any differences that arose between their workmen and themselves in a manner highly satisfactory to both sides. This being the case, the firm did not care to make any changes, and when the men employed in their works recently organized themselves into a lodge of the Amalgamated Association and presented a scale of that organization to the firm for their signature they declined to sign it, and as a result they have closed down their works until they can be operated in a manner that will be satisfactory to the firm.

Machinery.

The Westinghouse Air Brake Company of Pittsburgh, with works at Wilmerding, Pa., have commenced the erection of a new foundry and warehouse. The new buildings will be of iron and glass and 400 additional men will be given employment when they are completed.

Since the shutdown of the iron mills on July 1, a great amount of repairing has been going on and additional equipment has been added to many of the mills. The Enterprise Boiler Company of Youngstown, Ohio, have since the above date been in receipt of a large number of orders for boilers and other machinery to be placed in the idle mills. This firm have recently completed two stacks 140 feet high for the new works of the Chambers Glass Company at Kensington, Pa. In addition to this they have received the contract for the iron work for the new stoves and dust catcher to be erected at the Kittanning furnace of the Kittanning Iron Company of Kittanning, Pa. The Enterprise Boiler Co. have recently added

to their equipment a set of heavy bending rolls 18 feet long, and also a heavy 50-inch gap punch, such as was illustrated in *The Iron Age* of July 21, 1892.

The Covington (Ky.) Machine Works have increased their capital stock \$15,000, and will enlarge their plant.

The MacKellar Foundry Facing & Supply Company, Quincy, Ill., have been in operation about 15 months, during which time they have built up a very large trade. Their specialties are Youghiogheny sea coal, lead facings and blackings, fine plumbago and silver lead, pure charcoals and foundry supplies.

Judge La Comb of the United States Circuit Court has filed a decision allowing W. C. Lucie, the receiver of the United States Rolling Stock Company, the right to lease the property of the company at Chicago, Urbana, Decatur and Aniston to the United States Carrying Company, the lessee to pay taxes, interest and insurance on \$250,000 first mortgage bonds of the rolling stock company. President Cornfoot of the rolling stock company is reported as saying that the plant at Aniston, Ala., would be making cars by September 1.

A. J. Sweeney & Son of Wheeling, W. Va., are making progress in the erection of their new foundry and machine shop at Harvey, Ill. The main structure is 340 x 100 feet, substantially built of brick, and is now ready for the roof trusses. It presents a fine appearance from the Grand Trunk Railroad, along which it is located. Additional buildings are to be erected for an engine and boiler house, smith shop, offices, &c.

The National Malleable Casting Company have arranged for the purchase of ten acres in the southwestern part of Chicago from the McCormick estate and have begun work on a new plant, which is expected to represent an outlay of \$120,000. The site selected is between the right of way of the Panhandle Railroad and Rockwell street, and between Twenty-fourth and Twenty-fifth streets. The old works of the company are now just south of the site selected for the new plant. The additional works will include ten buildings, the main structure being 595 feet long.

The foundry of the Griffin Wheel and Foundry Company, on Sacramento avenue, Chicago, was destroyed by fire on the 10th inst. This is claimed to be the largest car wheel foundry in the world. It was served by two large cupolas, which are so damaged that they will also have to be rebuilt. The building was erected only two years since, and has been in steady operation from the time it was completed. The loss is fully covered by insurance, and as speedily as possible the works will be rebuilt. The officers of the company say that not many weeks will elapse until the plant is again in operation. The origin of the fire is a mystery, as every precaution had been taken to guard against such an accident when the works were built.

W. S. Smith & Co. will erect a machine shop at Eatonton, Ga.

Best, Fox & Co., brass founders and machinists, of Pittsburgh, have commenced the erection of a new works to be located on the corner of Railroad and Twenty-fifth streets, in that city. The machine and pipe-fitting shop will be a four-story brick building, fronting 72 feet on the railroad and 120 feet on Twenty-fifth street. The extensive brass foundry buildings are located 30 feet back of the new structure, giving ample light from the sides to the new and old buildings. The boilers will be located on the bank of the Allegheny River, 400 feet from the new building, and Lima oil will be used to generate steam. This fuel has been used by this firm for more than a year past with very satisfactory results. The old building occupied by this firm for eight years past, on the corner of First avenue and Ferry street, Pittsburgh, as a machine shop and office, will be abandoned on January 1, 1893. The improvements now under way will enable this firm to treble their output and handle the heaviest kind of work to the best advantage.

The Torrey Roller Bushing Works have been organized at Bath, Maine, to operate a brass and iron foundry, with \$60,000 capital stock. The officers are: President, Francis B. Torrey of Bath; treasurer, Francis B. Torrey of Bath.

Frederick J. Tischer, Jr., and Michael J. Garvey, doing business at St. Joseph, Mo., as Tischer & Garvey (Anchor Machine Shop), have dissolved partnership. Frederick J. Tischer, Jr., retiring from the firm, having sold his interest to A. S. Lehman, who, with Michael J. Garvey, will continue the business.

N. J. Kevlin has bought of Jones & Shaw the machine shop and foundry at Adams, Mass.

A new building for the purpose of galvanizing and bronzing is being erected at the Grey Iron Company's works at Lancaster, Pa.

The Edgar Hydraulic Molding Company have been organized at Columbus, Ohio, with a capital stock of \$40,000, and Wilton A. Miller, C. F. McCormick, H. B. Lord, Daniel J. Ryan and William Pollard as incorporators.

Roseman & Diehm continue the business of the City Foundry & Machine Company, Massillon, Ohio.

Hardware.

Reynolds & Co., New Haven, Conn., have just commenced the erection of two additions to their plant, one of which, 56 x 30 feet, two stories and basement, will be equipped with machinery of the latest design, largely automatic, for the manufacture of Set and Cap Screws. The other building, 113 x 40 feet, two stories and basement, will be occupied by the company's new office, stock and shipping departments. They advise us that the large and rapid increase in the demand for their goods has made the above additions an absolute necessity.

The capital stock of the Winton Bicycle Company was recently increased from \$25,000 to \$100,000. The stockholders of the Standard Lighting Company of Cleveland, Ohio, purchased the majority of this stock, and the factory of the Winton Bicycle Company will in the future be located in the plant of the Standard Lighting Company, and new buildings will be erected to accommodate the bicycle business. The Winton bicycle has, we are advised, many points of merit, and the company own several fundamental patents. The company will make only a high-grade machine, which has within the last year become very popular, having won several races, and on this machine they state that very fast time has been made. The machine will be thoroughly made, and the company will have the advantage of the fine tools and extensive equipment of the Standard Lighting Company.

H. L. Judd & Co., 87 Chambers street, New York, advise us that they are increasing their facilities in their Wallingford, Conn., Brooklyn, N. Y., and Chattanooga, Tenn., factories. The increased output of brass and iron bedsteads has made necessary the enlargement of the Wallingford plant. They advise us that trade in this line promises to be of very large extent in the near future. The manufacturers state that their line of brass and iron bedsteads will be especially complete, with new and original designs.

The McShane Bell Foundry of Baltimore, Md., report a full hand of business, which is increasing rapidly now that their name as manufacturers of church and other bells is getting so well known, not only in this country, but in almost every quarter of the globe. Their single church bell orders alone, we are advised, reach an average of from 70 to 75 monthly; and in addition they have constantly on hand large orders for chimes and peals. Among other work done by them recently is a chime of 8 bells, having a total weight of 22,000 pounds, for the Polish church of St. Stanislaus at Pittsburgh. Also four large sets of peals of four bells each, weighing 6000 pounds, for Sayresville, N. J.; Searcy, Ala.; Ansonia, Conn., and the Silver Link Assembly, New York, respectively. The most important sets of chimes, yet made by the McShane Bell Foundry is one of 15 bells for the Roman Catholic Church of St. Alphonsus at Baltimore, which have just been completed and hung. It is one of the largest and most complete chimes in the country, comprising a full chromatic scale, upon which pieces of music in any key may be played—the total weight being nearly 35,000 pounds. An order for ten bells for Detroit, Mich., is now in hand.

Miscellaneous.

The Schmalzried Stove & Range Company have been organized at Memphis, Tenn., to manufacture stoves and ranges. They will erect a plant at an early day.

The Columbia Mfg. Company of Brockton, Mass., are getting their plant and tools in shape, and early in the autumn will be turning out nozzles and wrenches.

The new steam lightship for Cornfield Point arrived at this port in twenty days from Bay City Mich., via the lakes and the St. Lawrence route. The contract price for four ships, all from the yard of F. W. Wheeler, is said to have been only \$160,000. They are 118 feet in height.

It is reported that the Whitely Harvesting Machine Company will remove their plant from Springfield, Ohio, to Muncie, Ind. It will give employment to 2000 men.

TRADE REPORT.

The settlement of the wages question in the Iron mills of the Pittsburgh district by the acceptance of a 10% reduction in the finishing departments is likely to be followed by a similar movement in the Shenango and Mahoning valleys. In the East quite a number of local troubles have been adjusted, and before long the only difficulty of any consequence will be that in which the Carnegie Steel Company are involved.

In many respects the announcement that Jones & Laughlins have agreed upon a Steel scale is as important as the settlement of the Iron strike. It means an ample supply of Soft Steel, which is bound to have its effect upon the whole Wire, Plate and Structural business.

Opinions differ widely as to the effect of the resumption of work. Some hold that the restricted output of Finished Iron and Steel during the past six weeks, with its clearing up of stocks and its deferred consumption, will tell upon the market much longer than many anticipate. Others contend that the lowered cost, in the shape of cheap raw material and lower labor, will soon bring prices down to old figures, and may lead to even lower prices. In some markets Bars, Plates and Structural Material have already developed a weakening tendency, when the extreme figures realized for prompt delivery are taken as the basis of comparison. Even then, things are still somewhat above prices quoted before the labor troubles.

Pig Iron is quiet in all the leading markets, although some exceptionally low transactions have cropped up. Thus a Birmingham furnace has sold a lot of 500 tons of Gray Forge in Central Pennsylvania, four months, at \$12, delivered, equal to \$7.94 at furnace, which we believe to be the lowest yet made. The Pittsburgh makers of Gray Forge have reduced their price to \$12.50 from \$12.75. It should be noted, however, in connection with this class of Pig Iron that the Southern output is undergoing a sharp reduction. The Tennessee Company have stopped one Ensley and one Alice furnace at Birmingham on account of the condition of the market, and have been forced by the Tennessee labor riots to bank the two South Pittsburgh furnaces. It is reported also that three De Bardeleben stacks have been banked, owing to a controversy over an Ore contract. Some Virginia furnaces have also stopped. On the other hand, the establishment of the \$5.50 rate for boiling in Pittsburgh means a sharp and permanent restriction in the consumption of Gray Forge in the West, and gives longer lease of life to the Eastern puddling plants, with their \$3.50 @ \$3.75 rate for puddling.

There is one point in connection with the struggle between Soft Steel and Puddled iron which has not attracted the attention it deserves, and that is that Soft Steel rolls easier, the tonnage being considerably heavier, and that the percentage of bad work is much less. This in addition to the simple question of relative cost of Steel Billets and Muck Bars and the question of quality and finish of product.

In Bessemer Pig both Chicago and Philadelphia report fair transactions, while Pittsburgh notes a quiet, unchanged market.

The business recorded in Bars, Plates and Structural Material during the past week can hardly be regarded as throwing much light on the immediate future of the market. Developments during the next few weeks must tell the story.

Philadelphia.

Office of The Iron Age, 220 South Fourth St., PHILADELPHIA, Pa., August 16, 1892.

The one thing that seems to be pretty well established is that business is in good shape for improvement. The supply of Finished Iron and Steel during the past six weeks has been cut down very materially, and although for a different reason the same may be noted in regard to Pig Iron. The fall trade, therefore, starts in with large stocks of Pig metal to draw upon, but with so much decrease in output that any considerable increase in consumption will soon manifest itself in decreased stocks. In view of the fact that prices in many cases are actually below cost, it should not require much foresight to see that the tendency will naturally be toward improvement in prices. As regards finished material the position is somewhat different, but equally favorable. Stocks are almost at the point of exhaustion, and prices are already very much higher than they were during the first half of the year. Further advance, therefore, is hardly to be expected for the present, as the output will soon be well up to what it was before the midsummer shut down. There may not be any appreciable decline, but if there is, it should not be considered as an indication of weakness, but rather in the nature of an adjustment to new conditions. This, in fact, will apply to the entire line, and at the moment it is impossible to do more than form a general idea of the market, which would be that Pig metal ought to improve, that finished material will be very active, and may possibly be a little lower. For the present it is a kind of "go as you please" market, every man quoting to suit himself—that is to say, those who have plenty of work (and they are not a few) quote full prices, those who are just starting up may quote a little less, while there are just a few, perhaps, that might be induced to make new sales at very near to the old prices. Then the question comes in, "What is Pig metal going to cost us?" "What will Billets cost?" &c. All these matters require time for consideration and adjustment, so that what one may quote may be very different to what others may be inclined to accept, and the price one day may be no price for the next. From these remarks it will be understood that the feeling is unsettled, but in the main strong. There is certainly going to be a good demand, but as regards prices both buyers and sellers are skirmishing for position. Sellers will try to get all the market will afford, and, being in a strong position, are not running after business, while consumers in many cases require material so badly that they cannot afford to be too independent. At the same time, they are not placing large orders at the new range of prices, but are inclined to postpone anything that can be postponed until the position becomes more distinctly defined than it is to-day.

Pig Iron.—Without any appreciable change in prices the market is steadier than for some time past. There is a considerable amount of business doing and some business refused at last week's prices, from which it may be inferred that the tendency is slightly in sellers' favor. Stocks are very large, but as an offset to this production has been sharply reduced, while consumption promises to be large. There is a good foundation, therefore, for an improving market. The heavy accumulation at furnaces will check any rapid change in prices, while the more favorable conditions as regards demand and supply ought to result in a gradual appreciation in values. This is probably all that can be said with any great degree of confidence, and for the present, at all events, the trade are inclined to move slowly. That is to say, buyers would in

many cases be glad to duplicate some of their recent purchases, but are not willing to pay an advance, while, on the other hand, sellers are not declining everything that comes along, even at the old figures, but they would sooner sell their product for 30 days ahead than for 60 or 90 days. The feeling is evidently undergoing a change, but it will take time to develop the true inwardness of things. Meanwhile sales have usually been at about the following prices for seaboard delivery, or its equivalent, and from 25¢ to 40¢ less for Southern Irons at Harrisburg, Baltimore or intermediate points:

American Scotch, No. 1x.....	\$17.00	@	\$17.50
American Scotch, No. 2x.....	16 00	@	16.50
Standard Penna (Lake Ore), No. 1x.....	15.00	@	15.50
Standard Penna. (Lake Ore), No. 2x.....	14.00	@	14.50
Standard Penna. (Lake Ore), No. 2 plain.....	13.25	@	13.50
Medium Quality, No. 1x.....	14.25	@	14.50
Medium Quality, No. 2x.....	13.25	@	13.75
Standard Virginia, No. 1x.....	14.25	@	14.50
Standard Virginia, No. 2x.....	13.75	@	14.25
Medium Va. and Southern, No. 1x.....	14.00	@	14.25
Medium Va. and Southern, No. 2x.....	12.75	@	13.00
Standard Penna. and Virginia Forge.....	13.00	@	13.25
Ordinary Forge.....	12.50	@	12.75
Hot-Blast Charcoal.....	18.50	@	21.00
Cold-Blast Charcoal.....	24.00	@	26.00

Bessemer and Low Phosphorus Pig.—There is some business doing all the time at about \$16 and \$17 @ \$17.25 respectively for small lots, f.o.b. cars, furnace, but several thousand tons of each kind were sold during the week at considerably lower figures, but owing to the terms and conditions exact prices cannot be given, as the sale was exceptional in several important features.

Steel Billets.—The market is still in a condition of abeyance, buyers being unwilling to meet the comparatively high figures now quoted, and makers equally unwilling to accept less, while the output remains on the present limited scale. Consumers would probably place large orders if prices were 50¢ to \$1 less money, but they prefer using up their supplies and taking their chance of the future rather than enter into new engagements at advanced rates. Deliveries on old contracts are due to a considerable extent, but as the mills that are to furnish them are still closed the parties have in the meantime to supply themselves as best they can. This leads to a somewhat urgent demand for August and September deliveries and very firm prices by those who can furnish them. Sales under these circumstances have been at prices varying from \$25.75 to \$26, delivered to near-by mills, and \$25.25 @ \$25.50 quoted for the three later months. The position of makers is very strong for the time being, and it is not thought that much of a decline will be met with in the near future—if at all.

Steel Rails.—Market quiet and unchanged. Mills are running full of work, taking all their departments into account, but the Rail trade is not by any means what was expected, although prices are steady at \$30, f.o.b. cars at mills.

Muck Bars.—There is quite a scarcity of good Bars, pretty nearly everything available having been picked up at from \$25.25 to \$25.75, delivered. There is still an active inquiry, but for the present buyers do not seem inclined to follow the advance any further.

Bar Iron.—Stocks have been reduced to so small a compass that the demand is very active, although at the figures now ruling buyers are not taking large lots. Mills are starting up on all sides, and by the end of the month the output will doubtless be pretty near what it was during the earlier portion of the year. Quotations are usually 1.75¢ @ 1.80¢ for best Refined Bars, but on desirable specifications some of the country mills would ac-

cept 1.70¢, and possibly shade that figure for something specially attractive.

Skelp Iron.—There is not much demand, although a few small lots have been taken at 1.60¢ @ 1.65¢, delivered, for Grooved and 1.80¢ @ 1.85¢ for Sheared.

Plates.—There is a very good demand for Plates, and for this and the following month near by mills are pretty much all filled up. Prices are a shade easier for deliveries at later dates, but it is a sellers' market and manufacturers have little or no difficulty within reasonable limits in securing prices to suit themselves. There are no specially new sources of demand, but general business is in good shape, ship builders, bridge builders, tank and boiler builders all being actively employed. Owing to additional mills starting up prices are a trifle irregular, but, on the whole, there is very little change from last week and nothing to indicate any unfavorable developments. General quotations are about as follows, delivered:

	Iron	Steel
Tank Plates.....	2.00 @ 2.05¢	2.00 @ 2.10¢
Shell.....	2.25 @ 2.35¢	2.25 @ 2.35¢
Flange.....	2.70 @ 2.90¢	2.50 @ 2.60¢
Fire Box.....	3.00 @ 4.00¢	2.70 @ 2.80¢
Special qualities.....		3.25 @ 3.75¢

Structural Material.—Mills are all amply supplied with work, and the position is as favorable as at any time within the past 12 months. There is a good run of small orders, which, with those already in hand, keep the mills working up to their full capacity, and at fairly satisfactory prices, which are about as follows: Say 2¢ @ 2.10¢, delivered, for Plates and Angles, and 2.30¢ @ 2.40¢ for Beams, Channels or Tees.

Sheets.—There is a good deal of inquiry, and prospects are favorable for a heavy demand, but in the meanwhile prices are unchanged. Buyers are less inclined to stand out for concessions, and it now seems likely that whatever change there may be will ultimately be in the direction of higher prices. Meanwhile sales are being made of best makes at about the following figures, viz.:

Best Refined, Nos. 14 to 20.....	2.40¢ @ 2.60¢
Best Refined, Nos. 21 to 24.....	2.00¢ @ 3.00¢
Best Refined, Nos. 25 to 26.....	3.10¢ @ 3.15¢
Best Refined, No. 27.....	3.30¢ @ 3.40¢
Best Refined, No. 28.....	3.40¢ @ 3.50¢
Common, ½¢ less than the above.	

Quotations given as follows are for the best Open-Hearth Steel, ordinary Bessemer being about ¼¢ lower than are here named:

Best Soft Steel, Nos. 14 to 20.....	3¢ @ 3½¢
Best Soft Steel, Nos. 21 to 24.....	3½¢ @ 3½¢
Best Soft Steel, Nos. 25 to 26.....	3½¢ @ 3½¢
Best Soft Steel, Nos. 27 to 28.....	3½¢ @ 4¢
Best Bloom Sheets, ¼¢ extra over the above prices.	

Best Bloom, Galvanized, discount....	@ 70 %
Common, discount.....	@ 72½ %

Old Material.—There is more inquiry, and for Steel a very much better demand, but as yet there is no improvement in prices. General quotations are about as follows, but with forced sales lower figures would have to be accepted: Old Iron Rails, \$19 @ \$20, delivered; Steel Rails, \$15.50 @ \$16.50, delivered; No. 1 Railroad Scrap, \$17 @ \$17.50, Philadelphia, or for deliveries at mills in the interior \$17 @ \$18, according to distance and quality; \$12 @ \$12.50 for No. 2 Light; \$12 @ \$13 for best Machinery Scrap; \$13 @ \$14 for Wrought Turnings; \$9 @ \$9.50 for Cast Borings, and nominally \$21 @ \$22 for Old Fish Plates, and \$14.50 @ \$15 for Old Car Wheels.

Wrought-Iron Pipe.—The market is still unsettled and irregular, and without very much improvement in demand. Prices are fairly steady; and discounts said to be about as follows for carload lots:

Butt, Black.....	60 @ 10 %
Butt, Galvanized.....	52½ @ 10 %
Lap, Black.....	70 @ 10 %
Lap, Galvanized.....	60 @ 10 %
Boiler Tubes, 3 inches and larger	67½ %
Casing.....	60 %

Chicago.

(By Telegraph.)

Office of The Iron Age, 59 Dearborn street, CHICAGO, August 17, 1892.

Plenty of inquiries are now in the market for almost every kind of Finished Iron and Steel; the demand which has for some time been confidently anticipated seems at last to be in full tide. Merchants and consumers would purchase a great deal of material if they knew exactly where to get it. The wages question has only been settled in part among the Western rolling mills and enough of these consumers are still idle to considerably affect productive capacity. Reports received here by manufacturers' agents indicate that even after the mills start up they will be so well supplied with business that it will be difficult for them to take additional orders for 30 or 60 days. This puts a new face on the situation. Many buyers have been holding off in the belief that as soon as the mills started up prices would drop; this proves not to be the case. Quotations are being very firmly maintained and it would be hard to say that rates will go higher than they are now, but a great many are confident that the era of low prices is over for some time to come and that much higher rates will prevail before we again see low prices.

Pig Iron.—The market still remains in buyers' favor. Nothing has yet occurred to indicate any change toward better prices. It is perhaps difficult to purchase some grades as low as they were sold two weeks back, but at the same time other grades manifest a weaker tendency. Influences are developing which may for a short time at least affect the price of the lowest grades of local Coke Iron. The sales reported for the week cover a 2000-ton order of Bessemer, a number of transactions of a moderate character in local Foundry, and a fair business in a small way in Southern Coke, while very little was done in Lake Superior Charcoal. Ohio Strong softeners are in quite good demand in small lots. This class of Iron seems to be again coming into favor, which would indicate that foundrymen have been having trouble with their mixtures. A rather significant fact is that consumers are taking in Iron very promptly, and often urging shipments in advance of the specified time. The smaller concerns are especially anxious to get Iron, and quite frequently are purchasing in other directions than those in which they have monthly contracts. Much interest is taken in the starting up of the rolling mills and Steel works in the hope that this will speedily influence the Pig Iron market. Quotations are as follows, cash, f.o.b. Chicago:

Lake Superior Charcoal.....	\$16.50 @ \$17.00
Local Coke Foundry, No. 1.....	14.50 @ 15.00
Local Coke Foundry, No. 2.....	13.75 @ 14.25
Local Coke Foundry, No. 3.....	13.25 @ 13.75
Local Scotch.....	15.00 @ 16.00
Ohio Strong Softeners.....	16.25 @ 17.00
Southern Coke, No. 1.....	14.50 @ 15.00
Southern Coke, No. 2.....	13.35 @ 13.85
Southern Coke, No. 3.....	13.00 @ 13.25
Southern, No. 1, Soft.....	13.35 @ 13.85
Southern, No. 2, Soft.....	12.85 @ 13.10
Southern Gray Forge.....	12.50 @ 13.00
Southern Mottled.....	12.50 @ 12.75
Tennessee Charcoal, No. 1.....	17.50 @ 18.00
Alabama Car Wheel.....	21.00 @ 22.00
Coke Bessemer.....	15.50 @ 16.00
Hocking Valley, No. 1.....	17.00 @ 17.50
Jackson County Silvery.....	17.00 @ 17.50

Bar Iron.—Numerous inquiries are being received from all classes of buyers. Prices continue to stiffen, and there are now very few sales at less than 1.65¢ @ 1.70¢, Chicago, half extras. The condition of buyers is shown by the sale yesterday of a carload lot of Common Iron at 1.87¢, Chicago, for immediate delivery. Orders have recently been placed with Western mills from Pittsburgh, Buffalo and other Eastern points. This is an unnatural course of trade, and it would not

happen if the Eastern mills were not very full of work. Car orders are coming forward, but the car shops here are too crowded with work to bid on this business, and it must go elsewhere, which will, of course, take the Bar Iron orders growing out of the orders into other localities. A car famine is already reported on quite a number of prominent railroad lines, especially those running into the Southwest. Hopes are entertained that this will lead to an active business in car building this fall. Jobbers are in receipt of continued heavy orders from stock, and still quote 1.90¢ @ 2¢ for Iron, and 2¢ @ 2.10¢ for Bar Steel.

Structural Iron.—A very active demand is reported for all kinds of material. This is, to a great extent, artificial, as it is caused by the inability of the Carnegie Steel Company to fill all their contracts, and their customers are obliged to purchase material wherever they can obtain it. This is affecting the market very decidedly, and it is not known how long the deficiency in the supply will continue. It is not only seen in Beams, but in Bridge stuff as well. Prices for Beams from mill range from 2.30¢ to 2.50¢, Chicago; Angles, 2.05¢ @ 2.10¢; Tees, 2.25¢ @ 2.40¢; Universal Plates, 2.15¢ @ 2.25¢.

Plates, Tubes, &c.—Numerous transactions are reported both from mill and from stock. Stocks held here would be sufficient for local purposes for some time to come, but are being rapidly drawn upon from outside, and will have to be replenished before many days if the demand continues to increase as it has done. The Plate mills have not yet started up generally, and difficulty is experienced in placing orders for mill shipments. Large orders are in sight as soon as there is a possibility of the wages question being settled. Mill prices on Tank Steel range from 2.15¢ to 2.25¢, Chicago, and Flange Steel, 2.50¢ @ 2.90¢. Stock quotations are as follows: Nos. 10 to 14 Iron Sheets 2.50¢ @ 2.60¢; Nos. 10 to 14 Steel Sheets 2.60¢ @ 2.80¢; Tank Steel, 2.30¢ @ 2.40¢; Flange Steel, 2.75¢ @ 3¢; Boiler Tubes, 65 % @ 67½ % discount.

Sheets.—Jobbers have lately run off their stock of Black Sheets very rapidly and some of them are again in the market for a supply to tide over the fall months. The mills are so well supplied with work that difficulty is experienced in placing contracts at reasonable figures. No. 27 Common, mill shipment, is held at 2.95¢, Chicago. Jobbers quote 3.20¢ from stock, but talk of making an advance. Continued heavy sales of Galvanized Iron from mill are reported at 70 and 5 % for Juniata. Small lots from stock are quoted at 67½ % @ 70 %.

Merchant Steel.—A very good business is in progress, especially in Tool Steel. Some of the leading houses assert that August will be the heaviest month they have ever had. Quotations on Machinery, Open Hearth Spring and Tire Steel are unchanged at 2¢ @ 2.20¢, Chicago, in carload lots from mill; Tool Steel, 6¢ @ 8¢ and upward, according to quality.

Billets and Rods.—Large transactions are in prospect for Billets. Inquiries have been increasing of late, and prospects for future business are very good from consuming works now getting into operation. Manufacturers continue to quote \$24.50. Inquiries are being received for Wire Rods for delivery during the fall months, but manufacturers hesitate to name prices in the hope that they will be able to get better figures than the rate for quick delivery, which is still \$34.50.

Rails and Track Supplies.—Moderate sales of standard Rails have been made during the past week. Inquiries for future delivery are coming up, and some large railroad schemes are developing which

may or may not lead to business. While the prospects for fall are considered fair, manufacturers are not sanguine that they will be able to turn out as great a tonnage as during the first half of the year. They quote \$31 @ \$32.50 for standard sections, according to quantity. Splice Bars are in some demand, and quotations range from 1.65¢ to 1.75¢ for Iron or Steel. Track Bolts with Hexagon Nuts are selling at 2.60¢ @ 2.65¢; Spikes, in carload lots, 2.05¢ @ 2.10¢.

Old Rails and Wheels.—Some buying of Old Iron Rails is in progress for Youngstown, but no sales have taken place for delivery to any of the local consumers. In the absence of such transactions the market is nominal at \$17.75 @ \$18.25. Old Steel Rails are neglected and are probably available at \$12 @ 13. Car Wheels are quiet and are quoted at \$15 @ \$15.50, according to quantity.

Scrap.—The local demand is very light, but sales have been made for delivery to the Valley mills in September, by which time they expect to be in full operation. Quotations are unchanged, as follows: No. 1 Railroad, \$16 @ \$16.50; No. 1 Forge, \$15 @ \$15.50; No. 1 Mill, \$11; Pipes and Tubes, \$10; Horseshoes, \$15.50; Sheet Iron, &c., \$7; Cast Borings, \$5.75; Wrought Turnings, \$8; Axle Turnings, \$9.50 @ \$10; Machinery Cast, \$11.50 @ \$12; Stove Plate, \$9; Malleable Cast, \$10; Car Axles, \$18.50 @ \$19; Fish Plates, \$17.25; Mixed Steel, gross ton, \$10.50 @ \$11; Coil Steel, \$15; Leaf, \$16.50, and Tires, \$15.

Metals.—A very good movement is reported in Copper. Carload lots are selling at 12.25¢ and small lots at 12.50¢. Stocks of casting Copper are reported to be light, but prices are unchanged at 11½¢ for carload lots and 11¼¢ for small lots. Spelter is in excellent demand at a little lower price, 4.70¢ now being the ruling rate. In Pig Lead there was very little business until toward the close of the week, when 300 tons of Desilverized changed hands at 3.97½¢. Consumers seem disinclined to lay in stocks, but at the same time refiners are not forcing sales, as they are looking for better prices. For carload lots they ask 4¢.

Cincinnati.

(By Telegraph.)

Office of The Iron Age, Fourth and Main Sts.,
CINCINNATI, August 17, 1892.

Unusual dullness has prevailed in the Iron market during the week ending today, there being no demand for any round lots, and even the current consumptive orders have only been conspicuous by their small number and the smallness of their aggregate tonnage. There has been no urging of stocks on the market, but there are free sellers at quotations, and buyers claim that they can buy No. 2 Foundry at \$9.25, f.o.b. Birmingham, and while this is not substantiated so as to make it a quotable price, it would not be surprising in the present dull condition of trade if sellers might be found to accept it. The disturbed condition of convict labor in the Tennessee Coal mining districts has already led to the blowing out of two Iron furnaces and the suspension of another one is contemplated. But so great is the accumulated stock of Iron that this is not likely to have much immediate effect upon the market. There is no essential change in the situation on the consumptive side of the market, but it seems to be viewed less hopefully and the general outlook for the future is not encouraging. Quotations are unchanged, as follows:

Foundry.

Southern Coke, No. 1.....\$13.25 @ \$13.50
Southern Coke, No. 2.....12.25 @ 12.50
Southern Coke, No. 3.....11.75 @ 12.00

Ohio Soft Stone Coal, No. 1.....16.00 @ 16.50
Ohio Soft Stone Coal, No. 2.....15.00 @ 15.50
Mahoning and Shenango Valley.....16.00 @ 17.25
Hanging Rock Charcoal, No. 1.....19.75 @ 20.00
Hanging Rock Charcoal, No. 2.....19.00 @ 19.50
Tennessee and Alabama Charcoal, No. 1.....16.50 @ 17.00
Tennessee and Alabama Charcoal, No. 2.....15.50 @ 16.00

Forge.

Gray Forge11.25 @ 11.75
Mottled Neutral Coke.....10.75 @ 11.25

Car Wheel and Malleable Irons.

Standard Southern Car Wheel.....18.75 @ 19.00
Lake Superior Car Wheel and Malleable.....17.75 @ 18.00

Pittsburgh.

Office of The Iron Age, Hamilton Building,
PITTSBURGH, August 16, 1892.

The event of the week was the settlement of the wage dispute between the Pittsburgh manufacturers and the Amalgamated Association, which was not arrived at until 17 meetings had been held in this city between the two Conference Committees. As we stated in our report of last week, the lodges of the Amalgamated Association voted unanimously against the acceptance of the proposition of the manufacturers to submit the differences to arbitration. In addition to this, the lodges of the Amalgamated Association declined to extend the powers of the Conference Committee representing that organization. In spite of this, a settlement was arrived at, the Amalgamated committee assuming the responsibility of agreeing to a reduction of 10% on the finishing department of the scale, while the manufacturers agreed to waive their request for a reduction of \$1 per ton in boiling. This will continue to be \$5.50 per ton on a 2¢ card, while Muck rolling is also unchanged, being one-eighth of the straight price for boiling, or 68½¢ per ton. The settlement of the trouble on the above basis was, of course, a compromise, with the advantage in favor of the manufacturers. One inevitable result of this settlement will be that Steel will be used more largely than ever before, and puddlers will be dispensed with wherever it is practicable to do so. When it became known that the Amalgamated committee had conceded a reduction of 10% in the finishing departments, there was considerable indignation expressed by the heaters and rollers, and statements were made on every hand that it would not be agreeable, and that the Amalgamated committee had no right to make such a concession without the consent of the Amalgamated Association lodges. As a result of this ill-feeling it was decided to call a meeting of the heaters and rollers, to take action on the matter. This meeting was held in Pittsburgh on Saturday afternoon, the 13th inst., and was attended by William Weihe and M. M. Garland, officials of the Amalgamated Association. These gentlemen both made addresses to the workmen, and pointed out to them that the manufacturers were a unit in demanding a considerable reduction of wages over the last scale, and that unless it was agreed to there would undoubtedly be a strike and a bitter one. In addition to this, a number of manufacturers had announced that unless a speedy settlement was arrived at they would start their mills with non-union men. This information and much more was imparted to the heaters and rollers, and after a long discussion they decided to withdraw their opposition and go to work at the reduction. As a result of this a number of mills have already started up, and others will resume as fast as possible. During the shut down, which was of six weeks duration, stocks were well cleaned up, and a considerable number of concerns have booked enough orders to keep them busy for some time to come. Of course all concerns who signed the scale before the final settlement was

reached will be allowed the benefit of the reductions made, dating from Wednesday, the 10th inst. Much satisfaction is expressed on all sides over the settlement of the trouble, as a general resumption of the mills will undoubtedly stimulate all branches of business. The only labor trouble now existing in Pittsburgh is the Homestead difficulty, which is practically settled by the defeat of the Amalgamated Association. New men are being put to work in the Homestead Steel Works just as fast as places can be found for them, and on Monday evening, the 15th inst., about 1750 men were at work. The new Bessemer department was put in operation on double turn on Monday last, and the start was very successful and highly satisfactory to the firm. This plant contains two 10-ton vessels, and was built by Julian Kennedy of Pittsburgh. It contains the most modern machinery, casting being done on cars, as is the practice at Sparrow's Point and other places. The Upper Union Mills are also in successful operation, and it is expected that the Lower Union Mills will be started up on Monday next, the 22d inst. The Duquesne Steel Works are running three turns of eight hours each, the product being about 800 tons of Billets every 24 hours. No attention is being paid to the Beaver Falls mills, and this plant will probably be disposed of or removed to some other location.

Pig Iron.—During the past week the Pittsburgh makers of Gray Forge Iron came together and after a short discussion the price of Gray Forge was reduced from \$12.75 to \$12.50 per ton. This was done in order to shut out competition from the Mahoning and Shenango valleys and also from some Eastern furnaces that have succeeded in selling a large amount of Iron to Pittsburgh consumers by naming very low prices. The resumption of operations in the mills is expected to stimulate the demand for Gray Forge to some extent, although some concerns had bought very largely before the shut down took place. Now that the Iron scale has been settled for another year, attention will next be given to the Steel scales, and it is probable that operations in the idle Steel plants will be resumed before long. This will open up the way for deliveries of Bessemer Iron which had been contracted for before the shut-down took place. If the large number of furnaces now out of blast can be kept in that condition it will be a good thing for the Iron trade, as it will allow some of the enormous stock now piled up everywhere to be worked off. These stocks must be reduced before any material improvement can be expected in the situation. During the week under review Bessemer just about held its own, with a limited amount moving. A slightly better inquiry for Foundry Iron is reported, especially for No. 2. Furnace A of the Carnegie Steel Company, Limited, at Braddock, was blown out on Monday, the 15th inst., for repairs. Two stacks of the above plant are now out of blast, and also one of the Lucy stacks at Pittsburgh. Prices have not shown much change with the exception of Gray Forge, on which we reduce quotations 25¢ per ton. We quote as follows:

Neutral Gray Forge.....\$12.50 @ cash.
White and Mottled.....12.2 @ \$12.50, "
All-Ore Mill.....12.50 @ 12.75, "
No. 1 Foundry.....14.25 @ 14.50, "
No. 2 Foundry.....13.25 @ 13.50, "
Bessemer Iron.....13.80 @ 14.00, "

While we quote Bessemer Iron as high as \$14, it is but proper to state that nearly all sales made within the last two weeks have been at prices ranging from \$13.80 to \$13.90, delivered at buyer's mill.

Ferromanganese.—No improvement can be noted in the demand, but with a general resumption of the Iron and Steel

mills increased sales will undoubtedly take place. We repeat quotations of last week, being \$60 for large lots, and for small lots \$60.50 and \$61 is obtained, delivered at buyer's mill.

Manufactured Iron.—As we note elsewhere, the Pittsburgh Iron manufacturers and the Amalgamated Association, after holding 17 conferences in this city, at last arrived at a settlement of the Iron scale. While the settlement made applies only to Pittsburgh mills, it is not improbable that the Mahoning and Shenango Valley manufacturers will sign the scale as agreed upon last week. On Wednesday of this week a meeting of the Conference Committees of the Amalgamated Association and the valley manufacturers will be held in Youngstown, and at this meeting it is expected that a scale will be agreed upon. It is certain that the Mahoning and Shenango Valley manufacturers will not be able to secure any better terms than were secured by Pittsburgh. By reference to the scale elsewhere in this issue, it will be noticed that paragraph No. 4 added to the Memorandum of Agreement expressly prohibits the Amalgamated Association from allowing concessions to any manufacturers not allowed to all others, providing the scale has been signed by such manufacturers and the trains and furnaces are alike. In case such concessions are allowed and proven by any manufacturers, all other manufacturers will be allowed the same benefits. In addition to this the Amalgamated Association pledges its word that no concessions will be allowed any manufacturers that are not participated in by all other manufacturers who have signed the scale. Two serious breaks occurred in the ranks of the Mahoning and Shenango Valley manufacturers, one of these being the Akron Iron Company, who signed the Amalgamated scale several weeks ago, to which we have already referred; the other is that of P. L. Kimberly & Co., Limited, operating mills at Sharon and Greenville, who signed the Amalgamated scale last week for their Sharon plant, which we understand has since resumed operations. The action of these two mills will undoubtedly influence other manufacturers in the valleys to arrange a settlement with the Amalgamated Association and resume operations as soon as possible. During the shut down of the mills, which continued from June 30 until the present week, stocks on hand were pretty thoroughly cleaned up, and it is doubtful if at any time within the past three or four years stocks of Finished Iron have been as small as they are at the present time. Again, orders have been coming in pretty freely lately, and as far as we know manufacturers generally are well supplied with orders, and resume operations under very good conditions. While the material advance in the price of Bars has been fairly well maintained, it is the general impression that just as soon as the resumption of operations is felt in the trade prices will again resume their former level. Some little difficulty has been experienced in some of the Pittsburgh mills when operations were about to be resumed. At several establishments where Billets were on hand that had been purchased from the Carnegie Steel Company, Limited, before the Homestead trouble took place the men absolutely refused to work them, and in addition to this attempted to make it a condition of their resuming work that their employers would refrain from buying Billets from the above firm. It is hardly necessary to state that no such promises were made, and, in addition, the men were given to understand that they would be expected to work up material no matter where it was made providing it was of a suitable character. When the men saw the determined attitude of their em-

ployers on this matter they decided not to press the point, and operations have generally been resumed in mills where repairs have been completed. The Pittsburgh Forge & Iron Company of this city, who were represented in the conferences held with the Amalgamated Association, have announced through their secretary, Frank E. Richardson, that they would not sign the scale as agreed upon, claiming that the reductions were not large enough and that they cannot pay scale wages and operate their mills at a profit. We continue to quote No. 1 Bars at 1.70¢ @ 1.75¢, while Old Rail and Scrap Bars are ruling at 1.50¢ @ 1.60¢. No. 24 Sheet we quote at 2.60¢ @ 2.70¢, and Refined Steel Bars at 1.70¢ @ 1.80¢, all 60 days, 2 % off for cash.

Soft Steel Billets.—The past week has been very quiet, and no sales out of the ordinary are reported, while Billets for spot delivery continue to command high prices. The prospect of an early resumption among the mills has kept orders from being placed and the market is hardly as strong to-day as it was one week ago. Jones & Laughlins, Limited, who are the largest Billet makers in this country, have arranged their steel scale with their employees. A report was started last week that the men employed at the Duquesne Steel Works would again come out in support of the Homestead workmen, but the report proved groundless. This plant is being operated to its full capacity of three turns of eight hours each, and is turning out between 800 and 900 tons of Billets every 24 hours. We quote the market at \$23.75 @ \$24.50 for prompt delivery. Billets for September delivery can be secured at a considerable reduction on the above figures.

Structural Material.—As we announce elsewhere that Jones & Laughlins, Limited, have arranged a scale with their employees, so that they are in the market with Structural Material. As yet Pittsburgh is not cutting much of a figure in the Structural Shape market outside of filling a few orders from stock. It is evident, however, that it is a question of only a short time until the Carnegie Steel Company, Limited, will again be in the market as the largest producer of Structural Shapes in this country. The fact that Pittsburgh has not been in position to take its usual quota of the large amount of business now going is unfortunate, as orders for Structural Material are undoubtedly plentiful at this time and better prices are being obtained than since the dissolution of the Beam Pool. We repeat quotations of last week, as follows: Beams and Channels, 2¢ @ 2.05¢ for desirable orders and 2.10¢ @ 2.15¢ for small lots; Universal Mill Plates, Steel, 1.90¢ @ 2¢; Universal Mill Plates, Iron, 1.85¢ @ 1.90¢; Angles 1.90¢ @ 2¢; Tees, 2.45¢; Refined Iron Bars, 1.70¢ @ 1.75¢; Steel Bridge Plates, 2.05¢ @ 2.15¢ and Z Bars, 2.15¢.

Wire Rods.—As we remarked last week, the recent advance in the price of Billets has advanced Rods to some extent, and Rods for prompt delivery continue to bring from \$31.50 to \$32. However, but few orders have been placed, and this will continue to be the case until a general resumption of operations takes place among the Wire Nail mills, which have been idle for some time.

Steel Plates.—The market in this respect is in about the same condition as Structural Material. While Pittsburgh is better fixed for furnishing Steel Plates than it is for furnishing Structural Material, there are many good orders which could be booked by our manufacturers if their plants were in operation. However, this condition of affairs will soon be remedied, as the labor troubles are gradually being fixed up. We repeat quota-

tions of last week, as follows: Flange, 2.10¢ @ 2.20¢; Fire Box, 3.60¢ @ 3.75¢; Shell, 2¢ @ 2.20¢; Tank, 1.85¢ @ 1.95¢, f.o.b. Pittsburgh.

Steel Rails.—There is nothing new to report, and old quotations of \$30, f.o.b. at mill, continue to rule. As we have before remarked, new business coming in is confined almost exclusively to small lots.

Merchant Steel.—Only a fair amount of new business is going, but the prospects for the future are considered bright. This has been an off year with Steel manufacturers in some respects, and while a fair amount of business has been done right along, conditions have confronted the manufacturers which, had they not existed, a much larger amount of trade would undoubtedly have taken place. Now that the fall season is approaching manufacturers confidently look for a material improvement in business.

Muck Bars.—The continued shut down of the mills has caused quite a scarcity in the supply of No. 1 Muck Bars, and as a result slightly better prices are being maintained. While the market ranges from \$24.50 to \$24.75 for Bars of the best grades, in several cases \$24.85 @ \$24.90 has been obtained. Now that a general resumption of the mills has taken place, the scarcity of Muck Bars will soon be removed and prices will probably decline to some extent.

Wire and Cut Nails.—Now that a wage scale has been agreed upon for drawing Wire, with a good prospect of an early resumption among the Steel mills, the prospects for the idle Wire Nail factories resuming operations at an early date are very favorable. In the Pittsburgh district the Nail factory of the Braddock Wire Company, which has been undergoing repairs, will start up this week. The Wire Rod department of this concern went on full on Monday morning, the 15th inst. There continues to be a considerable scarcity of Nails for prompt shipment, and it is almost impossible for makers to fill a large order where a wide range of sizes is called for. We continue to quote Wire Nails at \$1.65 @ \$1.70, carload lots, and \$1.75 @ \$1.80 in less quantities. With a general resumption of operations in the Wire Nail mills it is probable that prices will recede slightly. There is nothing new to report in the Cut Nail situation. While the demand is very small, but few mills are in operation, and stocks are reported as rather low. We quote the market at \$1.50 for 30¢ averages in Wheeling or Mahoning districts.

Wrought-Iron Pipe.—The condition of this industry is reported by the makers as being considerably better than for some time past. Some little inconvenience has been experienced, owing to the shortage of Skelp Iron, but with the resumption of operations in the mills this inconvenience will be overcome. The following is the official discount list of the association: Black, Butt, 60 and 10 %; Lap, 70 %; Galvanized, Butt, 52½ and 10 %; Lap, 60 %; Boiler Tubes, up to 24-inch inclusive, 60 %; 3 inches and larger, 65 %; Casing, 55 %; Inserted Joint Casing, 50 %. It is claimed that manufacturers generally are observing these discounts very closely.

Skelp Iron.—With a number of the mills already in operation and others preparing to resume, the recent scarcity of Skelp Iron will soon be overcome. Prices remain the same and we continue to quote Narrow Grooved at 1.60¢ @ 1.70¢, and Sheared at 1.80¢ @ 1.85¢, 2 % off for cash.

Old Rails.—Within the past week there has been some inquiry for Old Steel Rails, and several small lots have changed hands. It is stated that several of the sales recently made were of a speculative nature, those

buying believing that when the mills are all in operation again prices are bound to advance. We continue to quote Old Steel Rails, \$15.75 @ \$16 for short pieces; long lengths, \$15 @ \$15.25; and miscellaneous lengths, \$14.75 @ \$15. Old Iron Rails we quote at \$19, delivered in Mahoning Valley. We note a sale of 300 tons of Old Iron Rails delivered in the Shenango Valley at the above price.

Scrap Iron and Steel.—There is little change to note in the situation with the exception that dealers are looking for a better demand, owing to the resumption of the mills. It is not believed, however, that there will be any very material improvement in the demand for Scrap Iron or Steel, owing to the fact that many of the mills had large stocks on hand before the shut down. Prices do not show much change and we continue nominal quotations as follows: No. 1 Railroad Wrought Scrap, \$13.50 @ \$14 $\frac{1}{2}$ net ton; Cast Scrap, \$11.50 @ \$12 $\frac{1}{2}$ gross ton; Billet and Bloom Ends, \$16 $\frac{1}{2}$ ton; Cast-Iron Borings, \$6.50 @ \$7 $\frac{1}{2}$ gross ton; Railroad Coil Springs, \$17.50 @ \$18 $\frac{1}{2}$ gross ton; Leaf Springs, \$19.50 @ \$20; Old Steel Axles, \$18.50 @ \$19 $\frac{1}{2}$ gross ton.

St. Louis.

Office of The Iron Age,
Bank of Commerce Building,
St. Louis, August 15, 1892.

Pig Iron.—The market continues in the same unsettled state as last noted. The demand does not show any signs of early improvement, and consumers feel satisfied to buy as their needs require. The outlook is discouraging whatever view is taken of the market. The resumption of work in the different rolling mills should stimulate the demand for Gray Forge and incidentally help the price of same. But what is to help Foundry Irons? No. 2 Foundry Iron is quoted to-day at \$9.25, f.o.b. cars Birmingham, and we hear of a sale of Gray Forge to a car works close by this city at \$8.35, f.o.b. cars Birmingham, four months' time; this is equivalent to \$8.10, cash, at furnace. While furnacemen continue to sell their product at these figures, there is, as we have repeatedly stated in these columns, very little chance of prices rising above their present low level. No. 1 Soft is also being offered pretty freely at from \$9.25 to \$9.50, f.o.b. cars at furnaces. Furnacemen are building their hopes of a better market on the resumption of work in the rolling mills, and have evidently lost sight of the fact that large quantities of Iron remain on the furnace banks, a great portion of which is unsold. With this fact plainly in view it seems entirely out of the question to anticipate any material improvement in prices, unless the demand assumes large proportions, which at the moment does not look possible. During the week under review sales were made in small lots (the largest single sale amounting to 500 tons) at about the following quotations, which are for cash, f.o.b. St. Louis:

Southern Coke, No. 1 Foundry,	\$13.50 @ \$13.75
Southern Coke, No. 2 Foundry,	12.50 @ 12.75
Southern Coke, No. 3 Foundry,	12.00 @ 12.25
Gray Forge.....	11.50 @ 11.75
Southern Charcoal, No. 1 Foundry.....	15.00 @ 15.50
Southern Charcoal, No. 2 Foundry.....	14.50 @ 15.00
Missouri Charcoal, No. 1 Foundry.....	14.25 @ 14.50
Missouri Charcoal, No. 2 Foundry.....	13.75 @ 14.25
Ohio Softeners.....	16.25 @ 16.75

Bar Iron.—The market is not quite so firm as last reported, which is caused by the resumption of work in the mills. Jobbers report a steady trade, however, and indications point to a satisfactory demand for some time to come. Car builders are kept well employed, and the demand from

this quarter helps to sustain the market. Mills quote 1.65¢ @ 1.70¢, half rates, f.o.b. cars East St. Louis. Jobbers quote 1.80¢ @ 1.85¢ from store, according to quantity.

Barb Wire.—The manufacturers of Barb Wire are unable to account for the present condition of this commodity. Sales are light and prices weak and inclined to go lower. During the past week mills were kept very busy filling orders for Texas trade, which had to be shipped before to-day, as the freight rate was restored, beginning with this date. Prices are lower, however, and there does not appear to be anything in the situation to warrant the belief that any early improvement can be expected. Mills quote as follows: Painted, \$2.25; Galvanized, \$2.70; less than carloads 10¢ $\frac{1}{2}$ cwt. additional.

Wire Nails.—A heavy demand for Wire Nails has prevailed during the past week. Local demand has been light during the past two months, which was caused by the strike in the planing mills. This strike was declared off, however, a few days since, and an improved demand from city trade is anticipated. Prices remain as last quoted, as follows: Carload quantities, \$1.85 per keg. Less than carloads 5¢ $\frac{1}{2}$ keg additional. These prices are occasionally shaded 5¢ $\frac{1}{2}$ keg, but the indications are that \$1.85 will shortly be bottom.

John H. Heimbuecher, St. Louis, Mo., who has represented Cartwright, McCurdy & Co., Youngstown, Ohio, for the past 12 years, will in future represent the Union Iron & Steel Company, Youngstown, Ohio. This latter concern is a consolidation of Cartwright, McCurdy & Co. and the Union Iron & Steel Company. This connection will enable Mr. Heimbuecher to control a larger variety of all kinds of shapes, &c., to offer to the trade.

(By Telegraph.)

Pig Lead.—The market does not show any change since our last report. Sales have been light at 3.90¢; offerings are now held at 3.92½¢, but there is no business doing at that figure. Current requirements are limited, and there is nothing in the situation to warrant any immediate change in prices.

Spelter.—A slight improvement noticeable in this metal. Holders ask 4.55¢ and bids of 4.50¢ do not result in closing any trades. The consumptive demand is light, however, and there is an entire absence of speculation in the market.

New York.

Office of The Iron Age, 96-102 Reade street,
NEW YORK, August 17, 1892.

Pig Iron.—Some sales agents report a little more inquiry, but on the whole business is slow. Exceptionally low prices occasionally crop out. Thus a Birmingham furnace sold 500 tons of Gray Forge, 4 months, to a Central Pennsylvania mill at \$12, delivered, equivalent to \$7.94 at furnace. Bessemer Pig, 0.06 phosphorus, for open-hearth purposes, is being offered at \$15.50 @ \$16, delivered. We quote Northern brands at \$15 @ \$15.50 for No. 1; \$14 @ \$14.50 for No. 2; \$13 @ \$13.50 for Gray Forge, tidewater. Southern Iron, same delivery, \$14.25 @ \$15 for No. 1; \$13.25 @ \$14 for No. 2 and No. 1 Soft; \$13 @ \$13.50 for No. 2 Soft; \$12.25 @ \$13 for Gray Forge.

Spiegelisen and Ferromanganese.—Business is dull, with Ferro at \$57.50 @ \$58.50, in spite of reports from the other side of the growing scarcity and dearth

of Manganese there. It is reported that the cholera will not interfere with shipments from the mines in the Caucasus.

Billets and Rods.—There is very little doing. Pittsburgh Billets have been offered to Eastern consumers lately for forward delivery at \$22.50. Foreign Billets are nominally \$32 @ \$32.50, and Swedish Rods \$54.50 @ \$55.

Steel Rails.—The market is lifeless at \$30 at Eastern mills. It is probable that a meeting of the makers will soon be held.

Manufactured Iron and Steel.—A number of moderate-sized contracts have been placed. In Structural Iron, Bars and Plates, the Eastern mills are still well provided with work, but desirable orders for forward delivery could probably be placed at prices below those now ruling. We quote. Beams, 2.40¢ @ 2.75¢ for small lots and 2.20¢ @ 2.50¢ for round lots, according to sizes; Angles, 1.95¢ @ 2¢; Sheared Plates, 1.9¢ @ 2.10¢; Tees, 2.30¢ @ 2.75¢; Channels, 2.25¢ @ 2.50¢, on dock. Car Truck Channels, 2¢ @ 2.10¢. Steel Plates are 1.95¢ @ 2¢ for Tank; 2.20¢ @ 2.25¢ for Shell; 2.50¢ @ 2.65¢ for Flange; 2.6¢ @ 2.75¢ for Marine, and 3¢ @ 3.25¢ for Fire Box, on dock; Refined Bars are 1.8¢ @ 1.9¢, on dock; Common, 1.6¢ @ 1.65¢. Scrap Axles are quotable at 1.95¢ @ 2.10¢, delivered. Steel Axles, 1.95¢ @ 2.1¢, and Links and Pins, 2¢ @ 2.20¢; Steel Hoops, 1.90¢ @ 2¢, delivered; Cotton Ties, 85¢ $\frac{1}{2}$ bundle, at mill.

Merchant Steel.—We quote Machinery, 1.80¢ @ 1.85¢; Tire, 1.85¢ @ 2¢; Toe Calk, 2.20¢ @ 2.30¢, and Sleigh Shoe, 1.75¢ @ 1.80¢, delivered.

Track Material.—We quote Spikes, 1.90¢ @ 2¢; Fish Plates, 1.60¢ @ 1.65¢; Track Bolts, square nuts, 2.50¢ @ 2.60¢, and hexagon nuts, 2.70¢ @ 2.80¢, delivered.

Metal Market.

Copper.—There has not been the slightest improvement in the demand for any variety of Ingot, and offerings made through producers' representatives and through brokers have been treated with as much indifference as similar efforts in the direction of expediting business were during the preceding week. In other words, the policy of purchasing material only as immediate or well-defined wants may dictate seems still to be popular and apparently carries more weight than the producers' agreement at the present time. Certain it is that 11½¢ has become an extreme outside price for Lake Superior product, and that bids of 11½¢ have only to be made to be accepted by more sellers than one. Electrolytic Copper at 11¢ seems to no longer stand in the position of being a bargain, and on ordinary casting brands 10½¢ @ 10¾¢ have become common prices. Summed up briefly, the general market is slow and easy.

Pig Tin.—From the lowest price that was touched during the period covered by last week's review there has been very little change, and the market has presented nothing in the way of new or interesting feature. The clique that is supposed to have complete control did nothing calculated to stimulate "bull" or "bear" sentiment. The outside speculative interest therefore held aloof, and purchases for trade account and by consumers have been conducted in a perfunctory manner. The speculative dealings involved about 300 tons, chiefly August delivery, at 20.45¢ @ 20½¢, and September at 20.55¢ @ 20.60¢. Spot transactions were on about the same basis, say 20.45¢ @ 20½¢, net cash, for 10-ton lots and 20½¢ @ 20¾¢ regular for jobbing quantities. Shipments from the East during the first half of August were 850 tons to Great Britain and 850 tons to the

United States, making totals of 10,365 tons and 7100 tons respectively since January 1, against an aggregate of 16,913 tons for the corresponding period last year.

Pig Lead.—The market has been very quiet, and the dullness has brought to the surface a more forcible illustration of the undercurrent of weakness that circumstances suggested at the date of our last review. In point of fact, the weak position of the market stands out in bold relief at the present time. Against the fact of very good sales recently at 4.10¢, there is now to be recorded extreme indifference on the part of large consumers at 4.05¢, and only moderate purchases by other buyers at the reduced price. There were some indications that a further shading to 4¢ would stimulate purchases of supplies for delivery three to six months ahead, but anything above that price seems to be unattractive at the moment.

Spelter.—Eastern consumers are still very indifferent buyers, and that fact, along with the weight of surplus accumulated from the unprecedented production of the first half of the year (45,499 tons), offsets the support that may have been given by late free purchases for Western galvanizers. Hence the market displays weakness, and offers of Western brands for future shipment at 4.65¢ @ 4.70¢ are now the rule rather than the exception. Small lots on the spot command some advance over these prices.

Antimony.—There has been no change, prices standing about as they were last week and demand continuing quiet. Current quotations are 10½¢ @ 10¾¢ for Hall's, 12½¢ for L. X. and 13½¢ for Cookson's.

Tin Plate.—The market remains positively dull. Demand from all sources has been quite as slow as it was during the preceding week. Prices are not quoted, but it is only in remote instances that close buyers cannot "shade the market." We quote as follows for full weights: Coke Tins—Penlan grade, IC, 14 x 20, \$5.20 @ \$5.25; J. B. grade, do., \$5.35; Bessemer do., \$5.20 @ \$5.25; light weights, 100-lb, 10¢ less; 95-lb, 20¢ less; 90-lb, 30¢ less than full weight; Siemens Steel, \$5.35. Stamping Plates—Bessemer Steel, Coke finish, IC basis, \$5.60 @ \$5.65; Siemens Steel, IC basis, \$5.75 @ \$5.80; IX basis, \$6.80. IC Charcoals—Melyn grade, ½ X, \$6.40; for each additional X add \$1.50; Allaway grade, \$5.75; Grange grade, \$5.85; for each additional X add \$1.20. Charcoal Terns—Worcester, 14 x 20, \$5.75; do., 20 x 28, \$11.50; M. F., 14 x 20, scarce; do., 20 x 28, scarce; Dean, 14 x 20, \$5.45; do., 20 x 28, \$10.80; D. R. D. grade, 14 x 20, \$5.35; do., 20 x 28, \$10.40 @ \$10.45; Mansel, 14 x 20, \$5.30; do., 20 x 28, \$10.45; Alyn, 14 x 20, \$5.45; do., 20 x 28, \$10.65; Dyffryn, 14 x 20, \$5.65; do., 20 x 28, \$11. Wasters—S. T. P. grade, 14 x 20, scarce; do., 20 x 28, \$10; Abercarne grade, 14 x 20, scarce; do., 20 x 28, \$9.80.

C. Kirchhoff, agent of the United States Geological Survey, reports the production of Spelter during the first six months of the current year to have been as follows:

States.	1890.	1891.	First six months 1892.
Total.....	63,683	80,337	45,499
Eastern and Southern States.....	9,114	12,636	6,901
Illinois.....	26,243	28,711	15,483
Kansas.....	15,199	22,747	14,161
Missouri.....	13,127	16,253	8,954

It will be observed that the rate of production has very greatly increased, and that if it continues during the second six months of the current half year as great as it was during the first six months, the production of the country will reach the 90,000 ton mark, doubling since 1886. Stocks of Spelter on July 1 were as follows:

Stock of Spelter.

	January 1, 1892.	July 1, 1892.
Total.....	2,715	3,601
Eastern and Southern States.....	2,300	3,183
Illinois.....	294	381
Kansas.....	61	10
Missouri.....		

The increase in the stocks on hand has, therefore, taken place solely in the Eastern and Southern States.

British Iron and Metal Markets.

[Special Cable Dispatch to The Iron Age.]

LONDON, WEDNESDAY, August 17, 1892.

Prices for Pig-Iron Warrants have averaged a shade higher, Scotch selling at 42/1, Cleveland at 39/3 and Hematite at 49/3 @ 49/6. Business has been only fair and confined chiefly to operators identified with the "ring," who at least make a pretense of having confidence in the future of the market. This interest is chiefly in Scotch warrants, but the advance in prices has served to stiffen prices for other kinds. There has been no change in the productive capacity aside from a decrease of one in the number of Scotch furnaces blowing. A further reduction has been made in the stocks in Connal's stores. The totals are now 404,000 tons of Scotch and 18,000 tons of Cleveland.

The market for some lines of Steel is easier and the general situation rather uncertain. Thus quotations are made of £4. 4/ on Rails by some firms, as against a general quotation of £4. 5/ upward recently, and in Ship Plates business has been done at as low as £5. 15/, f.o.b.

Dealers have accumulated supplies of Old Iron, and that fact, together with slow demand, gives the market a weaker appearance.

Pig Tin market has been rather weak and unsettled. The break that took place at the close of last week has been followed by a further decline of 7/6, due, it is claimed, to absence of American orders. Outside speculation is extremely light, owing to lack of new incentive to operations on either "long" or "short" account. Stocks on spot have decreased 428 tons during past two weeks. Straits shipments during the fortnight amounted to 2000 tons.

Copper has declined about 10/, and the market remains in a dull condition. Speculation is confined to regular operations, and improvement in trade demand, although reported from some quarters, is too slight to have any influence upon the market. The fluctuations in Silver have had little, if any, effect. European stocks

have increased 2493 tons during the past fortnight. Chili charters were 1000 tons.

In the market for Tin Plates there has been rather more doing, but concessions from last week's prices were necessary to stimulate business, and the market remains in poor shape.

Scotch Pig Iron.—The market for makers' brands has been very quiet, and little change in prices has taken place:

No. 1 Coltness, f.o.b. Glasgow.....	53/
No. 1 Summerlee, " ".....	52/
No. 1 Gartsherrie, " ".....	51/6
No. 1 Langloan, " ".....	52/
No. 1 Carnbroe, " ".....	44 6
No. 1 Shotts, " at Leith.....	51/6
No. 1 Glengarnock, " Ardrossan.....	52 6
No. 1 Dalmellington, " ".....	47/
No. 1 Eglinton, " ".....	46/6

Steamer freights, Glasgow to New York, 1/; Liverpool to New York, 7/6.

Cleveland Pig.—Business moderate, but makers firm on price at 39/9 for No. 3 Middlesborough, f.o.b.

Bessemer Pig.—No improvement in the demand, and makers quote at 50/ for West Coast brands, Nos. 1, 2 and 3, f.o.b. shipping port.

Spiegeleisen.—Market very quiet and without change. English 20 % quoted at 77/6, f.o.b. shipping port.

Steel Rails.—The movement is slow and prices are somewhat uncertain. Heavy sections quoted at £4. 5/, f.o.b. shipping port.

Steel Billets.—Very moderate business passing, chiefly at old prices. Bessemer, 2½ x 2½ inches, quoted at £4. 5/, f.o.b. shipping point.

Steel Blooms.—Business moderate and the market without change. Makers quote £4 for 7 x 7, f.o.b. shipping point.

Steel Slabs.—Market dull and unchanged. Bessemer quoted at £4. 5/, f.o.b. at shipping point.

Old Iron Rails.—Slow business and prices in buyers' favor. Tees quoted at £2.15/ @ £2. 17/6 and Double Heads at £2. 17/6 @ £3, f.o.b.

Scrap Iron.—Dealings moderate and at old prices. Heavy Wrought Iron quoted at £2. 7/6 @ £2. 10/, f.o.b.

Crop Ends.—The market remains quiet and unchanged. Bessemer quoted at £2. 12/6 @ £2. 15/, f.o.b.

Manufactured Iron.—There has been only a moderate business and former prices rule. We quote, f.o.b. Liverpool:

Staff, Ordinary Marked Bars	8 10 0 @ 8 7 6
" Common ".....	6 5 0 @ 6 7 6
Staff, Bl'k Sheet, singles.....	7 5 0 @ 7 6 6
Welsh Bars (f.o.b. Wales).....	5 7 6 @ 5 8 6

Tin Plate.—No change in the situation at the close. We quote, f.o.b. Liverpool:

IC Charcoal, Alloway grade.....	14/ @ 14/6
IC Bessemer Steel, Coke finish.....	12/3 @ 12/6
IC Siemens ".....	12/6 @ 12/9
IC Coke, B. V. grade 14 x 20.....	@ 12/3
Charcoal Terne, Dean grade.....	12/ @ 12/3

Pig Tin.—Market closes weak, with Straits quoted at £93. 12/6 for spot, and £93. 10/ for three months' futures.

Copper.—No improvement in demand, and market closes easy. Merchant Bars quoted at £44. 2/6, spot, and £44. 15/, three months' futures. Best selected, £48. 10/.

Lead.—Business moderate, but prices steady at £10. 5/ for Soft Spanish.

Spelter.—A slow trade and the market still easy at £21. 2/6 for ordinary Silesian.

Samuel Thomas of Catasauqua, Pa., has gone abroad.

HARDWARE.

Condition of Trade.

THE IMPROVEMENT in the volume of business which we have lately noticed continues, reports from all sections of the country being favorable both as to the amount of trade and the conditions looking to the future. Prices remain without important change. Crop and financial conditions are encouraging for an active and wholesome business during the remainder of this year at least.

Chicago.

(By Telegraph.)

Hardware jobbers report a continued good trade and exceedingly bright prospects for the future. Their advices from their traveling men indicate a heavy fall business. Only light stocks of manufactured articles are held everywhere, while the excellent condition of the farming interests will cause many improvements to be made this fall, which will require a very large supply of all kinds of staple Hardware. Heavy Hardware trade continues to be in first-rate shape, except that stocks of Iron and Steel are now badly broken in most warehouses.

St. Louis.

(By Telegraph.)

A good demand is reported by jobbers for Shelf Goods. Heavy Hardware is also ordered freely, and a large trade is reported in odds and ends of summer goods, such as Wire Screens and the like. Barb Wire is heavy, and the demand has fallen off considerably during the past ten days. Wire Nails, however, are very active at the recent advance. Cut Nails are also selling in good quantities. The demand for Bar Iron is not so heavy as it was ten days ago, and prices are somewhat easier. Sheet Iron is quite active; in fact jobbers have no reason to complain of the August trade, which is usually light, but which up to date has been very gratifying. Collections are good.

Philadelphia.

SUPPLEE HARDWARE COMPANY.—All hands are once more at work, and satisfactory reports in the way of orders being received from the salesmen seems to be the general report from our city, as, notwithstanding the excessive heat which we have experienced in our immediate vicinity, trade has been fairly active, while orders seem to have contained of late more of an assortment, which shows that the trade with the retail dealers must have been somewhat more active. While the trade on staples has been up to the average, small lines generally known by us as Shelf Hardware are receiving their fair amount of attention. Among some leaders now selling we might mention Parers, which the trade are buying in anticipation,

probably recalling their experience of last year, at which time they were caught with a stock below the requirements of their customers. Dry weather has also made a good demand for Carriage and Tire Bolts of all grades, many unlooked-for repairs having been made a necessity. Barb Wire has had a fair sale considering the season of the year. Nails, unfortunately, have suffered a slight reaction as far as disbursements are concerned, no doubt due to the fact of recent advances, which from day to day, the trade hope, may be reversed, a movement which could probably only be made possible by an early adjustment of the labor trouble in the Western part of our State. This season of the year we generally look for few or no sales on Freezers, but they have been more actively in demand than we have generally found them in the month of July, continued run of hot weather causing telegraphic orders to be a common occurrence rather than the exception. Gun goods, with Ammunition and supplies, are starting in well for an active fall trade. Prices, as a rule, have been very steady, very few changes having been noted in either direction. Collections, while fair, have been a little slower this month than was our pleasure to report about the same time in July. It is our painful duty to mention the sudden death during the past week of one long and most favorably known among the Hardware trade in our city. We refer to the late H. E. Terry, who for a number of years past has been so successful in managing the Philadelphia office of the Russell & Erwin Mfg. Company. His loss will be felt by all the jobbing trade, among whom he occupied a prominent position. At the time of his death he was vice-president of the Hardware Merchants' and Manufacturers' Association of Philadelphia.

St. Paul.

FARWELL, OZMUN, KIRK & Co.—We are now in the heat of our harvest and every available man throughout the Northwest is supposed to be in the harvest field or getting ready for it. Since our last the crops have generally come forward satisfactorily, but in some sections the heavy storms have beaten down the crops, and thus made the harvesting of them very laborious and also shortened the amount of grain that can be gathered, and the hail has also done some damage, but upon the whole the crops are good, and with reasonably favorable weather for the next few weeks a very fine harvest will be secured. This is especially true of a large part of the two Dakotas, and it is very gratifying to the St. Paul jobbers that this is the case, as it will enable them to make good collections this fall from that territory, and also to wipe out some old scores that have been carried for a long time and which were likely with another bad crop or two to become valueless. Trade and

collections have both been fully as good down to date as was expected, and indeed better, and a fine fall trade is now substantially assured. No changes in prices of staples or other Hardware have occurred here that are deserving of mention, and things are moving on in a very even and satisfactory way.

San Francisco.

HUNTINGTON-HOPKINS COMPANY.—Trade continues about the same, very little, if any, improvement over the latter part of July. Collections have fallen off, also, but this is to be accounted for from the fact that while harvesting is about over, farmers are holding for an advance, prices on grain ruling low, notwithstanding the light crop. In the northern central portion of the State the fruit crop is very abundant and of fine quality, while in some other sections it is light, although the quality is good; shipments to the Eastern States have in most cases realized enormous prices, a great improvement over last year's business. The shipment in cold storage direct to Europe, on passenger time, reached there in first-class condition, but as our English cousins were dubious about refrigerated fruit keeping long enough to be sold with profit, the prices realized were very low. Shipments have been going forward each week since the first one started, and the consignees are confident of overcoming the prejudice now existing, just as they were obliged to do when refrigerated fruits were first shipped to the Eastern States. If they succeed, it will open up another great market for California products. The local Cordage Company, again reduced their card on the 9th inst.; the base on Sisal and Duplex is now 9 cents, and on Pure Manilla 12 cents. The dealers here have, as a rule, advanced prices on Wrought Iron Pipe, as was predicted in our last. The weather so far this summer has been cool, as a rule, even in the interior portions of the State, a happy contrast to the torrid East. It has been a comfort, physically, but on the other hand has retarded the ripening of the fruit to a certain extent, so that we are short on the supply of melons, &c., which are usually very plentiful this time of the year.

Boston

BIGELOW & DOWSE.—There are few changes to note during the past two weeks. The heat has been intense, and no one has had the energy to either buy or sell except what was an absolute necessity. Many of the architects are very busy, but when asked if there is the usual amount of building this summer they say there is not. Wire Nails are a trifle firmer in price, while Steel Cut Nails remain about the same. Stocks of both kinds are light and poorly assorted. Some stock orders for fall goods are being placed, but the prices still favor the buyer.

Baltimore.

CARLIN & FULTON.—Since our last report we are glad to say that we can feel the pulse of trade beating a little more strongly and giving indications that life is not yet extinct in its heretofore inanimate body, but will soon be as strong and active as ever. In our own city, the conversion of all our old horse-car lines into those of rapid transit is giving employment to thousands of laborers and making this city a great market for electrical supplies, while the immense tunnel passing through the center of our city, an enterprise of one of our great railroad corporations, is also scattering thousands of dollars among the laboring classes, and affording great opportunities for the sale of such material and implements as are necessary in its construction. The municipal government is spending large amounts in local improvements, widening streets and repaving its highways, all of which tends toward putting in circulation an immense amount of money, especially among those who will spend it in our midst. As is the case with other large cities, a great portion of our population spends the summer months in suburban homes or in the mountains and at summer resorts convenient of access. The presence of such a large number of visitors in any community makes a market for the farmer at his own home for his poultry, butter, eggs, milk and other produce, the sale of which reaches proportions which are surprising. Orders from the South are now beginning to come in quite freely and buyers from that section are arriving daily in our market; but we notice a tendency toward careful and conservative buying, with no disposition to stock up either in expectation of advances or in excess of wants. Last year the Southern banks were large borrowers in this city, but this year their indebtedness is comparatively small, and the local money market will no doubt be easy and the usual October stringency be avoided this year.

Omaha.

LEE - CLARKE - ANDRESEN HARDWARE COMPANY.--The month of August is seldom marked by any special activity in jobbing circles, but the past two weeks has been an exception among most of the wholesale dealers. Midsummer dullness has not yet materialized in this market. The volume of business still continues large in most all lines, and the movement of goods is unprecedented for the season of the year, with no immediate prospects of a let up. Collections may be reported as satisfactory, which would seem to indicate that retailers are having a good cash trade. The West is not a borrower of money to the extent it has been in former years. Not that enterprises have in the least been postponed or abandoned, but from the fact that the entire West is in a much more healthy condition financially than formerly. Choice first-class loans are now difficult to secure, and only at a conservative rate of interest. The crop prospect is almost everything that could be desired, and if the crop is marketed at last year's prices producers would be es-

pecially pleased, and might possibly "feel their oats."

New Orleans.

A. BALDWIN & Co.—We are happy to state that there is a continued steady improvement in the situation. Orders are coming in very freely, and it is beginning to bring the volume of business up to last season, which was an unusually large one with us. There are some complaints of continuous rains in this section, somewhat damaging the cotton crop, but we do not think it will be serious enough to affect business to any extent. We are preparing for a very large fall business. A great many of the leading lines are becoming scarcer and prices are somewhat firmer.

Portland, Ore.

FOSTER & ROBERTSON.—We cannot report much change either in the matter of trade or collections since our last. We read dally of the excessively hot weather prevailing at the East, and can hardly realize that same is true. Our nights and mornings cool, and middle of the day warm, makes an ideal summer climate. This weather follows a winter that was not cold enough to make ice, so that taking climate as a slight consideration we must claim to be a little ahead. Our crops, so far as heard from, are turning out better than could be expected some thirty days since. Business generally is fair, and well up to what it should be considering the time of year and harvest being under way. The only change in prices to report is a decline in the price of Bar Iron, it now selling for 2½ cents base. Cheaper freight rates offered by the Cape Horn route now puts this coast on an equal or better footing than the East. Other declines are likely to follow in prices of staple goods as the season advances.

Cleveland.

THE W. BINGHAM COMPANY.—Business is resuming its wonted aspect now that the vacation season is about over, and orders are beginning to come in freely, with a general feeling of confidence prevailing. The demand for fall goods is more pronounced, dealers seeming to be ready to buy, and early deliveries generally specified. The continued labor troubles in the iron mills are beginning to have their effect upon the delivery of goods into which iron enters largely, and considerable annoyance is caused by the delays. Collections are fair.

Louisville.

W. B. BELKNAP & Co.—The signing of the scale on the 10th inst. by Pittsburgh manufacturers has settled one vexed question at least for another year and we are promised an immediate resumption of work by a large number of mills. Inasmuch as the question of puddling is a less important one year by year, as Steel is being substituted for Iron, the reduction of wages in the finishing departments was of much more importance, we take it, to the manufacturing interests at large. Stocks in the country have been as a matter of course much reduced and there will

be an abundance of orders for some time to come in order to replenish them. Chain manufacturers, for example, especially complain of inability to secure stock, and Coil Chain is apparently scarce. At the same time, the mills were wise enough, before shutting down, not to book any future business worth speaking of and they are doubtless prepared to take care of what is now presented. The most noticeable factor in the matter of prices of finished product, next to the scarcity resulting from stoppage, is that of Steel Billets. These are declared to have made a solid advance of \$2 to \$3 per ton. In consequence most things are sharing it in a measure. If we could have just a little more demand than at present exists the market would be lively indeed. Money continues to rule easy in the banks here, as it does in other large centers, and investors have to be content with much smaller returns for their money than for a year or two previous. This means, of course, that eventually they will endeavor to find more profitable outlets, and there will be a new era of development in speculation.

Notes on Prices.

Cut Nails.—The condition of the market remains without substantial change since our last report. We quote for round lots at Western mills, \$1.40 @ \$1.42½ on a 35 cent. average. In that district a good many mills are idle, and very few are quoting prices except for immediate delivery. There seems to be a feeling that they will be able to demand higher prices later in the season. The question of wages still remains unsettled. In the Atlantic States prices remain as they have been for some time, viz., \$1.55 for Steel Nails in carload lots at mill on a 25 or 35 cent average, with equalization of freight. Iron Nails are 3 cents a keg less, and in 1000-keg lots 5 cents a keg less for Iron or Steel Nails is quoted. In this district mills are generally running, although there seems to be some trouble in getting slabs, so that they are in many cases unable to fill orders promptly.

The following are the prices of carload lots of Steel Cut Nails on dock, New York:

	Base.
25 to 30 cent average, extra.....	\$1.70
31 to 39 " " " "	1.65
40 to 49 " " " "	1.60
50 cents and up " "	1.55

Iron Nails are held at 3 cents a keg less than Steel, and lots of 1000 kegs are 5 cents a keg less than the above prices. Steel Nails from store in New York are held at \$1.75, and Iron Nails at \$1.72.

Chicago, by Telegraph.—Cut Steel Nails are in fair demand, and large inquiries are in the market from those who usually carry heavy stocks at this time of the year. Sellers are not numerous, as very few of the idle mills have yet started up, but prices show no disposition to advance. The usual quotation on 30-cent average is still \$1.62½, Chicago, on mill shipments. Jobbers advanced their prices during the week to \$1.75 on small lots. They have for a long time had a very narrow margin

on Cut Nails, and now propose to get a little profit on transactions in this commodity.

Wire Nails.—The improved demand noted last week continues, and prices remain firm, but without change. We quote from mill \$1.65 for round lots, or in exceptional cases \$1.60. Small lots from store in New York are quoted at \$1.85 to \$1.90.

Chicago, by Telegraph.—The large trade have not done much buying of Wire Nails during the past week, but are evidently holding back waiting for the mills to start up, in hope that prices may then recede. The manufacturers, however, appear to be getting firmer in their views rather than weaker. The manufacturers selling at \$1.70, Chicago, are in the minority, most of them asking from \$1.73 to \$1.75. Quotations from stock have been advanced by the jobbers to \$1.85, and they report a very good trade from all classes of customers.

Barb Wire.—The demand for Barb Wire is increasing. Prices remain firm, \$2.80 @ \$2.65 being the extreme quotation from mill for Four Point Galvanized. New York prices may be quoted as \$3.10 for small lots and \$3 by the carload.

Chicago, by Telegraph.—Manufacturers note more inquiry than last week and better sales, indicating that fall trade has really opened up. From this time forward they expect their business to continue to increase from week to week until the height of the fall demand is reached. While some are sanguine of a large volume of business, others believe that it will be less than last spring, but at the same time expect it to be fully up to the average of previous years. Prices are no stronger than they have been, this branch of trade apparently being out of sympathy with other classes of manufactured products. Carload lots from factory are quoted at \$2.25 for Painted and \$2.70 for Galvanized, while jobbers quote \$2.40 and \$2.90 respectively for small lots. Jobbers report that the fall trade with them has also opened up, and a considerably better movement was noted the past week than for some time previous.

Wrought-Iron Pipe.—The advance in prices recently made by leading manufacturers in this line is being well maintained. Some mills report having secured large contracts for pipe lines. The Steel Pipe seems to be making gradual inroads into the sales of Iron Pipe, although to do this some makers seem to think it necessary to shade extreme prices of Iron Pipe about 5 per cent.

Loaded Shells.—Manufacturers of Loaded Shells report a large increase in the demand for these goods over previous seasons and are all pushed to the utmost to fill orders. Prices are unchanged and no change is anticipated during the present season.

Glass.—Since our last report on the Glass market the scale has been signed in Pittsburgh, applying to the Western district. It is expected that a meeting of the

Eastern Window Glass Workers' Wage Committee and Manufacturers' Committee will be held soon, perhaps this week, when it is expected that the scale for the next blast will be signed. It is reported that the scale of wages of last year were adopted at Pittsburgh without any changes, and that the rules and usages will remain practically the same; there appears to be no reason why an early settlement in the Eastern and Northern districts should not be reached. The settlement at Pittsburgh was reached in the first conference, which is referred to as unusual, and indicates the harmony and good feeling that prevailed. The date upon which the factories will start is still undecided, but the dates under consideration range from September 1 to October 1. The productive capacity of all the districts, as shown by official figures, indicate a large increase over last year. Business is very quiet at present with no change in prices, either in American or Imported Glass. Quotations are on the following basis: American Window Glass, 1000-box lots or more, 80, 10 and 5 per cent. discount; carloads, 80 and 10 per cent. discount; less than carloads, 80 and 5 per cent. discount; French Window Glass, 80 and 5 per cent. discount; American Plate is held at a discount of 50, 10 and 5 per cent., and imported Plate at a discount of 60 per cent.

Australian Trade.

LETTER FROM POLHEMUS LYON.

MELBOURNE, July 9, 1892.

WITHIN a few weeks there were 17 vessels in the Melbourne harbor carrying the American flag, and almost any time there are three or four, or more, and of course two out of the three steamers which make the journey monthly between Australia and San Francisco float our flag—little acorns from which great oaks grow.

There is much said here about a possible or probable line in the very near future between this country and Vancouver, which will give the long-desired semi-monthly connection with New York. Again, constant reference is made to the Nicaragua Canal as promising a highway between New York and this country which will materially increase business.

There is no question but that purchases of American products are increasing at a much greater ratio than the imports from Europe. In this the importers take much interest, for as a rule they obtain a greater margin of profit from American sundries than from those of the Old Country.

Before I visited Australia some three years ago I think my conception of the country, or rather of the style of business houses, was rather crude.

Referring more particularly to the Hardware houses in Melbourne: There are 12 wholesale concerns in this city of less than half a million and a colony of say 1,300,000 people.

Two of these concerns carry a stock which at inventory time figures sharp on to \$1,400,000 each, and this, it is understood,

is confined to Hardware and sundries pertaining to this.

One of these houses gives me to understand that they do not buy less than 2500 tons of Galvanized Iron per annum and often get orders for from 40 to 50 miles of Wire Netting at a time, for which the demand is very great on account of the rabbit pest.

Several of these houses who have retail branches have the Lamson cash railway service and Morley Bros.' railroad shelf ladders.

In looking for points as to arrangement of stores or manner of doing business here, I am continually told by these people that they look to us for suggestion and help in this matter rather than to give it.

Although the trade out here, because they are virtually six months or more from the source of supply, are obliged to carry very large stocks, still they buy of each other to a large amount pending arrival of goods they are short of; this makes it desirable, so they think, to carry duplicate stocks, or should I rather say *fac-simile* stocks, on very many leading lines, so that it is exceedingly hard for a manufacturer not known in this field to work in his goods, since the profit in having the right line to supply their competitors' needs is an item well worth looking after; as Max O'Rell says, "Let me illustrate." A buyer for the largest house here told me that he would order a quantity of one of my lines, and asked me to mention the fact to the buyer of another large wholesale house, since they supplied each other's shorts, and thus I got in a new line, selling to both houses.

A system which prevails among all the wholesale Hardware trade in Australia is that of buying in the local market through brokers, to whom requirements are sent, and who scour the market, not divulging the intending buyer's name until purchase is made and the contract ready for signature. This prevents trespassing on each other's domain, and the broker lives on the 1 per cent. obtained from the seller.

Of course each house has its city pick-up buyer, who purchases the sundry daily needs where they are two-penny items.

There are five first-class wholesale Hardware houses in Adelaide, where I lately spent nearly three weeks. That city is the depot for supplies to the Broken Hill mines, claimed to be the largest silver mines in the world; and South Australia is a splendid field for agricultural tools as well, since they are raising more wheat, I believe, than any other colony.

Just at this writing a strike has broken out at Broken Hill, affecting very seriously the commerce of Adelaide, but the trades union treasuries are so low and the army of unemployed has grown to such a volume that no strike can hold very long.

As an evidence of increasing enlightenment I believe every house in Melbourne and Adelaide of any note are subscribers to *The Iron Age*; in fact, I am getting converted to advertising, for my orders going home this mail carry with them a quantity of clippings from *The Iron Age* with the demand for the goods referred to.

A New Hardware Jobbers' Association.

THE HARDWARE JOBBERS of Pittsburgh, Allegheny and Wheeling have organized an association under the name of the Hardware Jobbers' Association of Pittsburgh, Allegheny and Wheeling. This association was formed on July 20, and its members are as follows: Bindley Hardware Company, J. C. Lindsay & Co., Logan, Gregg & Co. and Wharton, Bakewell & Co. of Pittsburgh; Jos. Lautner & Co., Allegheny, and Ott Bros. & Co. of Wheeling, W. Va. The officers of the association are W. C. Reitz, president; W. P. Heiskell, first vice-president; J. H. Gettleman, second vice-president; Thos. A. Parke, treasurer, and S. J. Davis, secretary. The objects of the association are manifold, among them being the establishment of close and cordial relations between the jobbers interested; to meet once a month, or oftener if desirable, to discuss and exchange views as to the condition and prospects of trade, together with such other matters as may be of mutual interest, and to consider and appropriately act upon such matters of injustice and abuse as are from time to time inflicted upon the jobber, and which the individual jobber in his capacity as such has not sufficient power to correct. The association will also confer with similar organizations in other sections and act with them when advisable.

Trade Items.

HENRY WALKE, Norfolk, Va., under date August 4, notifies his friends and patrons that in order to more satisfactorily handle his increasing trade, he has found it necessary to have a larger warehouse, and he has accordingly secured the building 88 Water street, formerly occupied by J. W. Old & Co. Mr. Walke is expecting to be in his new location by September 1, and with increased facilities and a complete stock of everything required in the Hardware, Railroad, Steamboat and Mill Supply business, trusts to merit the continuance of the patronage heretofore bestowed on him.

THE EMPIRE KNIFE COMPANY, West Winsted, Conn., advise us that they have been recently adding very largely to their new line of Pocket Knives, so that in their photo-engraved catalogue they represent an extensive and beautiful line of American-made Knives. They state that while they manufacture all the latest designs in Jack Knives, they have also given considerable attention to making fine Knives, so that they are now putting on the market a complete line and one specially adapted to fine city trade. The company will be pleased to forward a copy of their new catalogue to those desiring it. L. B. Taylor will continue to represent them to the jobbing trade in the West and South, and John P. Lovell Arms Company of Boston in New England.

O. F. KETCHAM, Plymouth, Ind., has disposed of a half interest in his Hardware, Stove and Implement business to J. N. Wilson, ex county sheriff. The style of the new firm is Ketcham & Wilson.

THE MODEL HEATING Company is the name of a new company organized to take over and conduct the hot-water heating business heretofore carried on by the

Abram Cox Stove Company, Philadelphia, and the Hogan Boiler Company, New York. Their officers include Abram C. Mott, Philadelphia, president; Jos. N. Stoughton, New York, secretary; and John J. Hogan, New York, consulting engineer. The Model Heating Company will market the Novelty Circulator, a new form of hot-water apparatus that is at present attracting considerable attention, and in due season will introduce other specialties. The New York office of the company is in the Stewart Building, corner Broadway and Chambers street, and the Philadelphia office at 144 North Second street. The book descriptive of the Novelty Circulator, containing illustrations of the installation of hot-water apparatus in dwellings, schools, churches, railway stations, &c., and which bears the title of "Water and Air Circulation in Heating and Ventilating," will be sent to those desiring it.

THE BAILEY AUGER BIT COMPANY since starting their new works at Harriman, Tenn., October 12, 1891, advise us that they have enjoyed a very good and constantly increasing trade, and have found it necessary to double their former capacity. The necessary machinery for this purpose was placed during the month of July. On August 3 the works were started full force, and the manufacture of the Bailey Patent Single Spiral Double Cutter Augers and Bits of every variety is now being pushed to the full capacity of the plant.

GEORGE REUTER, JR., general manager and treasurer of the American Wringer Company, 99 Chambers street, New York, returned this week, from a two months' trip abroad. At his office he was greeted by an elaborate floral display, arranged by his co-workers, in anticipation of his return. In addition to this evidence of esteem, they had provided his desk with a handsome silver inkstand and tray.

GEORGE C. ALBAUGH, who for so many years has been identified with the Brinly, Miles & Hardy Co. of Louisville, Ky., who make the well-known Brinly Plows, has severed his connection with that firm and entered on a commission business of his own in that city.

ANNOUNCEMENT IS MADE that the firm of Glock & Tallmadge, Columbus, Ohio, has been succeeded by the Tallmadge Hardware Company, by whom the debts and accounts of the old firm have been assumed. The new concern with increased capital expect to add new branches and to enlarge the volume of their business to a considerable extent. D. Tallmadge is treasurer and general manager of the company. The other officers are as follows: F. W. Hubbard, president; F. A. Jacobs, vice-president; and H. M. Hubbard, secretary.

THE SELTZER BROTHERS of Lebanon, Pa., have organized a company for the manufacture of their patent Lebanon Heater, which has met with gratifying success at the hands of the trade. The company were chartered on July 22, and consist of J. H., U. D., B. F. and A. P. Seltzer. They contemplate embarking largely in the production of household specialties and other Hardware.

G. FRANCIS GREENIDGE, for the past five years with R. K. Carter as buyer, has lately connected himself with the Iron Clad Mfg. Company as buyer, purchasing all their factory supplies, and in addition has full charge of their general freight business.

THE WEED IMPROVED FAUCET, made by North Brothers Mfg. Company, Philadelphia, for whom John H. Graham & Co. are agents, 113 Chambers street, New York, is advertised in another part of this

issue. It will be observed that illustrations of the Boring and Plain Faucets are presented, the point being made in regard to the Faucets that they will not leak or wear.

A. J. WRIGHT, formerly buyer for the Hart Hardware Company, Louisville, Ky., informs us that he has recently connected himself with the Yale & Towne Mfg. Company, and will be located at their Chicago office.

THE MERIDEN MALLEABLE IRON COMPANY, Meriden, Conn., advise us that they have perfected their Rapid Lemon Squeezer and are prepared to furnish the trade in any quantities. The delay was occasioned by the lack of suitable machinery for their manufacture.

The Bellaire Stamping Company.

THE NEW PLANT of the Bellaire Stamping Company, at Harvey, Ill., is now in active operation. All the departments are, however, not running full, as additions are still being made to the machinery. About 250 hands are now employed, which will be increased to 300 or more September 1. The products of the works embrace all kinds of Drawn and Stamped Ware, Central Draft Lamps, Lanterns and Oilers, but special attention is given to Stamped Tinware, Seamless Drawn Drip Pans, Zinc Oilers and Lanterns. Their Enameled Ware is of two kinds, one having a gray coating and the other blue and white. The gray enamel is their standard and the blue and white is furnished when specially desired.

The works consist of a fine collection of buildings, all built of brick, iron and glass. So closely are the windows placed that the whole front appears to be glass, making the interior unusually light and cheerful. The arrangement of the buildings is as follows: A main structure, three stories high, occupies two sides of a square, one side being 310 feet long and the other 218 feet. Several one story buildings are then placed within the square at right angles with the longer side of main building, and parallel with the shorter side. They are thus compactly arranged, and while separate to a great extent are still so connected as to afford easy communication between them. A side track from the Grand Trunk Railroad runs along the entire front of the main building, enabling half a dozen cars to be loaded or unloaded at one time, while a track from the Calumet Terminal Railroad in the rear runs into the very heart of the works. The first floor of the main building, which is used as a shipping and receiving room, is built on a level with the floor of a freight car, so that trucks can be run easily from the shipping room into the cars. These excellent railroad facilities have been used to advantage in laying out the works, which were so designed that articles in process of manufacture continue to pass forward from the time they are first taken in hand until they are shipped.

The machinery employed by the company is of the most modern character. They have a huge drawing press, built by the E. W. Bliss Company, for heavy deep work, which is one of the largest

made. It weighs 70 tons. Drop forges, presses in great variety, punches, flanging machines, spinning machines, headers and considerable special machinery fill a large part of the main building. An instance of the special methods employed which may be mentioned is in the manufacture of their Oilers. The bottom, instead of being soldered on, as is usually the case, is seamed on by a special machine which so thoroughly turns and fastens the edges that there is no leakage, each can being tested carefully as it leaves the seamer. The furnaces in which the Enameled Ware is baked are heated with oil.

The company issue a handsome catalogue of their wares. The officers are as follows: J. T. Mercer, president; W. C. Stewart, vice president and manager; W. Topping, secretary; H. E. Randolph, treasurer. The main office of the company is at the works at Harvey, which is a suburb of Chicago, but a sales office is maintained in rooms 505 and 507, Unity Building, Chicago.

Louisville.

[From a Special Correspondent.]

THE HARDWARE TRADE of Louisville is getting in a much better humor, and there is less complaining among those jobbers who were impatient. A really good business has gradually evolved itself, indicating a heavy trade for the fall, yet every one feels that it will be on a conservative and safe basis; all the weeding out has pretty much been done, the failures grow fewer and fewer each week, and the country is evidently ready for an active business, notwithstanding that it is a Presidential election year. Many go so far as to predict, by comparison, that there will be a veritable boom time; that history must repeat itself, and that the cycle has come around and our constellation is in the proper position in the Zodiac. Except for a few enthusiasts, the country will be well satisfied; yes, better satisfied, with just a general march of prosperity.

The great West has made another large crop, and enough money will flow into that region to keep their banks independent. A big demand for goods is already ruling there, and as soon as the South can recover a little she will respond, as all growing countries are bound to do. Traveling agents of some of the Eastern manufacturers already report excellent success in the larger trade centers through the South, and a healthier tone seems to be growing in the cotton region. Although there are undoubtedly bright prospects ahead for the jobbers and manufacturers, yet basing values on the present price of Pig Iron, on which basis finished materials and merchantable goods will for a long time be valued, he is probably a wise manufacturer who will on the flood tide place all of his output for at least six months ahead at current prices. This seems to be the plan of the Pig Iron manufacturers, who do not count so much on an advance in prices, but hope to keep stocks moving and get quick returns; another fact, like the tariff, will give the consumers of Pig, a walled-in arena to fight in, and the country will get the benefit of low prices still. There is some scarcity of Bar Iron and Barb Wire. Several Wire Nail makers have started up again, and these will probably be enough to keep the increasing trade supplied. The mills rested enough to refresh themselves and keep a surplus out of the market.

Price-Lists, Circulars, &c.

MERIDEN CUTLERY COMPANY, Meriden, Conn., and 80 Chambers street, New York: Table Cutlery. The catalogue illustrates their complete line of Table Cutlery with all the latest designs. Cuts are given of Table Knives, Nut Picks, Fruit Knives, Butter Knives, Pie Knives, Cheese Scoops, Fish Carvers, Individual Fish Knives and Forks, Carvers, Cheese Knives, French Cooks, Hotel Slicers, Bread, Ham, Butcher, Skinning, Hunting, Kitchen, Sane and Putty Knives and Case Goods.

THE NATIONAL CASH REGISTER COMPANY, Dayton, Ohio: "Factory News." This pamphlet is issued monthly, and is devoted to the interests of the employees. The August number contains a view of the plant; illustrations of operators at work on various parts of registers, and printed matter pertaining to the factory.

WIEBUSCH & HILGER, New York: American wrought "Horseshoe" Brand Anvil, for which they are sole agents. It is stated that these goods are made of the best American wrought iron, and faced with the best crucible cast steel. The top and bottom of the anvil are each one solid piece and welded at the waist. The steel faces are referred to as being put on in one solid piece, and not in two or more pieces. The anvils are warranted to be sound, to be free from flames and to have faces hard and true.

W. C. HELLER, Montclair, N. J.: Grip Wire Stretcher and the Heller Mail Box. The Wire Stretcher is referred to as simple in construction and as warranted to hold firmly any kind of fence wire. The Mail Box is of iron, opening down, allowing the mail to be easily removed, and is provided with a wire spring for papers and packages.

THE THOMPSON MFG. COMPANY, Elkhart, Ind.: The Thompson Universal Truck. These Trucks go in pairs, one on each side of a box, case or crated cook stove, near the middle. They are adapted to any size box or crate, and are guaranteed to carry 4000 pounds.

PITTSBURGH WIRE COMPANY, Bindley Hardware Company, general agents, Pittsburgh, Pa.: Price-list of Steel, Machinery, Tinned, Straightening and Cutting Wire. A table of sizes, weights and lengths of Steel Wire is also given, together with a list of special wires which are supplied.

ERIE SPECIALTY MFG. COMPANY, Erie, Pa.: Automatic Cork Pullers, Hand Corkscrews, Improved Cork Pullers, Lemon Squeezers, Cigar Cutters, Cigar Box Openers, Tobacco Cutters, Beverage Mixers, Ice Shaves, Ice Grips, Metal Advertising Plates, Paper Weights, &c. The manufacturers state that they guarantee strictly first-class work and prompt shipment.

AMERICAN STOVE BOARD COMPANY, New York and Chicago: Stove Boards. Their 1892 pamphlet catalogue illustrates the Crystal, Oxidized, Embossed, Zinc and new Tacoma designs in Boards; also sizes and telegraph code. There are no prices given.

J. DARIMONT & CIE, Bruxelles: Representatives of American Hardware. Their catalogue of 125 pages illustrates a large line of leading American Hardware, with names and descriptions of the articles in French. Some German goods are shown, but American articles are recommended as being superior at no greater cost.

THE AVERY STEEL MFG. COMPANY, Chicago, William H. Jacobus, 90 Chambers street, New York: Avery's "Never Leak" Steel Mortar and Brick Hods. It is claimed by the manufacturers that these Hods are strongly made, light, easy to carry, durable, and have a superior clamping device and convenient handle adjustment.

ROUSE-DURYEA CYCLE COMPANY, Peoria, Ill.: Spring Frame Logic. This pam-

phlet contains new information on the Spring Frame question, together with extracts from leading Cycle authorities of England. It also contains testimonials from users of this year's Sylph Cycles.

WASHBURN & MOEN MFG. COMPANY, Worcester, Mass.: Springs. These include Bed, Furniture, Wringer, Spiral, Clock, Watch and Special Springs. A small pamphlet is devoted to Glidden Barbed Wire, with illustrations and description.

A. J. JORDAN, St. Louis, Mo.: Hotel and Restaurant Supplies. A circular illustrates Tea and Table Spoons, Knives and Forks, Carvers, Kitchen, Cook, Butcher and Butter Knives and Table Hollow Ware.

THE NATIONAL CHUCK MFG. CO.: William Whitlock, 132d street and Park avenue, New York, National Chucks, Special Machinery, and sole makers of the Patent Reversible Jaws. Illustrations are given of the Universal Chuck and Combination Chuck, with common and reversible jaws, National Independent Four-jawed Chuck and 4-inch Combination Chuck with three jaws.

PHILLIP GROSS, Milwaukee, Wis.: Builders' Hardware. The catalogue, 9 x 12 inches in size, containing 135 pages, is devoted to illustrations, descriptions and price-lists of Builders' Hardware. The catalogue is issued for the purpose of aiding the architect in writing specifications for Hardware, and for giving the contractor or builder an opportunity to judge of the grade of goods specified. A specialty is made of fine House Trimmings in artistic designs, but no attempt has been made to illustrate this class of goods. The catalogue is printed on a fine quality of paper; the cuts show to good advantage, and the price-lists are conveniently arranged.

ONEIDA COMMUNITY, Niagara Falls, N. Y.: Halter, Dog, Cow, and Coil Chains, Dog Collars, Martingale Chains, All-Steel Spring Snaps, All-Steel Two-Ring Swivels, Hercules Sash Chain, Silver-Plated Ware, &c. Their American Chains are shown in a large variety of styles, while Dog Collars are made in bright steel, solid blued, brass nicked, aluminum, solid nickel and oreide, lined with black, russet and orange, and also unlined.

It Is Reported—

That the Tallmadge Hardware Company, Columbus, Ohio, have been incorporated with a capital stock of \$100,000, the incorporators being Darius Tallmadge, Fred. W. Hubbard, Felix A. Jacobs, Ralph N. Hubbard and William E. Jacobs. This company is the successor to the Hardware firm of Glock & Tallmadge. Mr. Glock has retired to enter another business. Mr. Tallmadge will assume the direction of the new company, and with increased capital and resources it is expected that its business will be very much enlarged.

That Calahan & Daley, Hardware merchants, Fall River, Mass., have removed to new quarters.

That Taylor & Anseom will open a new Hardware store in East Oakland, Cal.

That A. P. Maclay of Savana, Ill., has recently removed to Dubuque, Iowa, and has greatly enlarged his stock.

That Brownlie & Neil is a new firm at Cherokee, Iowa, who have purchased the stock and good-will of Isaac Boddy at that point.

That Phelps & Whitnell have succeeded S. A. Tenant in the Hardware business at Kingsley, Iowa.

That the Hardware store of S. Woodhead & Bro., North Adams, Mass., was destroyed by fire on the 30th ult.

That S. Woodland & Bro., Hardware dealers, North Adams, Mass., have been burned out.

That the Hardware firm of Bradley, Blinn & Lyon, New Haven, Conn., has

been dissolved. Wallace H. Bradley is now the sole owner.

That Elmer C. Drowne of Peabody, Mass., for several years past with the wholesale Hardware house of Bigelow & Dowse, Boston, has bought a half interest in a retail Hardware business at Harri-man, Tenn.

That Kirk & Son, Westport, Conn., have opened their new Hardware store.

That the Stickney Hardware store at Waltham, Mass., has been sold to Alfred Doran.

That Charles Buckley, Hardware merchant, Somersworth, N. H., has removed to a new location at that point.

That the store of Frank Bros., Portland, Ore., dealers of Implements, was destroyed by fire on the 1st inst.

That Fuller's Hardware store at Kendall, N. Y., was entered by burglars on the 5th inst., and \$40 worth of Knives, Razors, &c., stolen.

That the Hardware firm of Stemberger & Kempster, Glidden, Iowa, has been dissolved.

That T. B. Eaker, Hardware merchant, New Bethlehem, Pa., has sold out.

That the Colorado Hardware Company has been organized at Rico, Col., with a capital stock of \$15,000. The directors are Henry Klingenberg, John W. Burley, L. Haberman, W. W. Parshall and C. C. Barclay.

That Alphonse B. Coley, dealer in Hardware, South Norwalk, Conn., has admitted W. S. Smith as partner. The style of the firm is now the South Norwalk Hardware Company.

That W. W. Foulke & Co., dealers in Heavy Hardware, &c., Richmond, Ind., have dissolved.

That A. J. Paul has succeeded George F. Dashiell & Co. in the Hardware business at Portland, Ore.

That the establishment of the F. Ozanne Hardware & Stove Company, Memphis, Tenn., was recently damaged by fire and water. The loss was \$2000, fully insured.

That the Rico Hardware Company is a new concern at Rico, Col. The capital stock of the company is \$30,000. The directors are as follows: J. J. O'Boyle, V. J. Craft, George W. Chesebro, J. F. Mitchell and Theodore Barlow.

That J. Beuret, dealer in Hardware and Tin, Auburn, Ind., is selling out.

That I. H. Castle is now carrying on the Hardware business formerly conducted by Castle & Hoffman, Clarks, Neb.

That R. F. James, dealer in Hardware and Agricultural Implements, Lexington, Neb., has sold out to Plummer & Eager.

That Maxwell & Watson, Astoria, Ore., are selling out their business.

That Joseph Silberberg & Co., Memphis, Tenn., Hardware merchants, have dissolved. Joseph Silberberg continues the business.

That the Hardware establishments of F. Everett & Co. and C. W. Maynard, Chehalis, Wash., have been consolidated.

That the Sutton Hardware Company, Sutton, W. Va., are out of business.

Paints and Colors.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

Signs of improvement in the distribution of various lines of Paints and Colors are reflected in the information imparted by jobbing houses during the week, and

in a few instances, manufacturers and importers note rather more interest in their specialties. While there is doubtless some contrast with the general experience during the first half of the month, it does not appear that the improvement is anything in excess of what should come about in the regular order of things as the autumn season advances. Individual operations in all departments are on strictly conservative lines, at all events, and orders for goods for later delivery, as well as for prompt shipment, seem to be gauged almost wholly by well-defined needs. Speculative interest in base materials is nowhere visible, nor is there anything in the general surroundings distinctly at variance with what has been the rule for some considerable time past. Hence steadiness of values for pretty much all lines of goods and favorable prospects for continuance of the same.

White Lead.—To all accounts there has been a very fair distribution of corrodors' product in the smaller sized packages, chiefly to near-by and local trade, and the movement of the pigment in large kegs was represented as having been more liberal than during the preceding week. Regarding sales of the cheaper varieties the reports were somewhat variable, yet indicative of improvement, particularly in the commonest kinds consumed by curtain manufacturers and for other purposes than house painting. In prices there have been no changes whatever by manufacturers of either pure Lead or mixtures, and the special rates quoted at second hands disclose nothing really new in that connection.

Red Lead, Litharge, &c.—Outside of routine business there has been little or nothing doing in the articles specified, and the demand at present is of merely routine character. Orange Mineral has fared similarly. Neither line of goods is offered with freedom suggestive of any pressure to sell, however, and the former line of prices for all grades prevails.

Zincs.—Large consumers are placing some orders for domestic Oxide for September and later delivery, but thus far the doings in that line have not been of remarkable character, probably for the reason that present conditions are without incentive for ordering supplies except as well-defined wants would particularly dictate. Distribution in a jobbing way has been merely fair, and the movement of foreign brands contrasts in no respect with the usual run. Prices all along the line stand about the same as they have ruled for some time past, with the market steady in tone.

Colors, &c.—The market for bulk goods used by grinders remains in a rather quiet and decidedly uninteresting condition. Few orders involving future deliveries are being placed, and purchases of spot goods are merely fair for the season. In goods prepared for house-painters' use the movement contrasts in no marked degree with what is customary at this period, yet sales show some increase as the fall season advances, and prices for both Dry and Oil Colors of first quality remain steady. Some improvement is noted also in sales of various lines of Ready-Mixed Paints and Metallic Paints, but the improvement is not sufficient to have any decided bearing upon values.

Miscellaneous.—Block Chalk is without change, the offering being moderate and at full prices only, while demand continues rather slow. Whiting sells at former prices and to a fair extent for both prompt and near future delivery. There is only routine business in Barytes, Terra Alba and other Clays, with prices the same as have ruled for several weeks.

Oils and Turpentine.

New features in this line have been few in number, and of anything but a striking character. Apparently there is less sus-

picion of renewed warfare between conflicting interests in the Linseed Oil branch being engaged in right away, and indications are not wanting that pressers are disinclined to move prices for Lard Oil higher unless forced to do so by enhanced cost of raw material. In other words, it would appear that the tendency is toward more steadiness in those lines in which a great deal of uncertainty has prevailed for some time past. Elsewhere the underlying influences differ in no marked degree from those that have existed since the beginning of the month. Hence business proceeds on commonplace lines and variations in prices are unimportant.

Linseed Oil.—Some little Raw Oil of out-of-town make is still offered at comparatively low price—say about 38¢, delivered, in carload lots—but the offerings come in a somewhat peculiar way that would encourage suspicion that purchases would be difficult to make on that basis if any considerable quantity of Oil was called for. Be this as it may, the fact remains that the Western combine concerns keep their price at 39¢, less 2 ¢, and that city pressers, all of whom work harmoniously with that interest, do not quote below 40¢. The uncertainty that does exist tends to prompt caution on the part of buyers, however, and sales have increased very little during the week. Regarding the Flaxseed crop, somewhat unfavorable reports have had circulation latterly, but that the alleged probable reduction in supply has any direct bearing upon prices for Oil at the moment is doubtful.

Cotton-Seed Oil.—In this line the dealings have been of very moderate volume and nothing has transpired in the way of home or export demand calculated to give affairs a brighter appearance. Here and there parcels of a few hundred barrels or less have been parted with at a little concession from the prices asked latterly, but the leading holders talk and act as though confident of a better turn in affairs ere long, since nothing perceptible stands in the way of a full average consumption. Sales have been chiefly at prices on the basis of 28¢ for prime crude and 31½¢ @ 32¢ for prime Summer Yellow.

Lard Oil.—Prices for prime quality Lard Oil have been variable during the week, ranging between 62½¢ and 65¢. Those figures, in other words, represent the range of quotations on wholesale quantities. That business of other than retail character has been done at over 62½¢ is doubtful, however, and the high cost still operates to hold business in check, so that less than the average distribution for the season is going on. Low-grade product receives more attention, but not enough business has been done to bring about any decided change in prices for the same.

Fish Oils.—The only interesting feature in this line is a movement latterly in crude Menhaden Oil involving about 3000 barrels, all for home account, at the combination prices. Nothing has been done here or at the East in crude Sperm or Whale Oils. The manufactured products are moving out fairly in a jobbing way at former prices.

Cocanut Oils.—Under the pressure of full supplies and freer offering prices have receded somewhat; 5¢ @ 5½¢ for Ceylon and 5½¢ @ 5¾¢ for Cochin was accepted by holders of spot stock.

Spirits Turpentine.—Stronger advices from the South have served to impart rather more tone to the local market. Further than that, however, there is no change to note, the local demand being of very ordinary character.

After a ten days' trial the Essen Court has acquitted the Bochum Works of falsely stamping with the inspector's mark steel rail seconds.

Wrought-Steel Gravity Blind Hinges and Catch.

The Stanley Works, New Britain, Conn., and 79 Chambers street, New York, are now putting on the market blind hinges for wood, as shown in Figs. 1 and 2. The

with a flanged edge and projecting handles at the ends. The flanged edge enables the housewife or cook to lift the pan easily and safely from the oven. The manufacturers state that pans of this form of construction possess great advantages over the old style pan made of common stove-pipe iron, such as the absence of

ments are also composed of heavy gauge sheet steel. It is claimed that cooking by means of this roaster is the most effective and economical method possible, as the steam produced by the process cannot escape, but is absorbed by the article in the case and acts as a basting. The manufacturers state that as there is no evaporation there is no shrinkage or loss of weight, and all the flavor and nutritious qualities of the food are retained, while the food cannot be spoiled by careless cooks, the roaster itself doing the cooking if placed in a well-heated oven.



Fig. 1.—Wrought Blind Hinge.

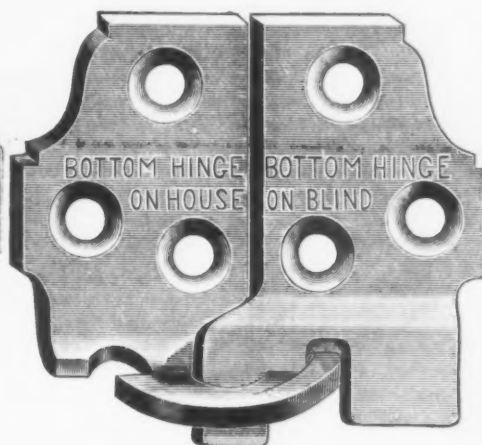


Fig. 2.—Wrought Blind Hinge.

manufacturers state that the hinges lock the blind by the action of gravity, and, being made from heavy gauges of wrought steel, will not break. Their improved construction enables the blind to be securely locked when open, and the hinge to be

lapped corners, seams and wire beading, which collect and retain grease and filth of all kinds; also the superior quality of the metal, which prevents it from warping and twisting, and, further, its greater durability. These pans are furnished

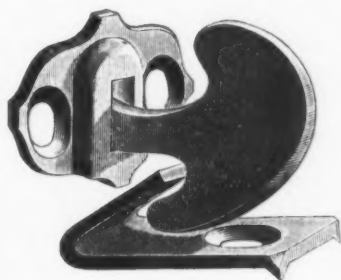


Fig. 3.—Improved Sill Catch.

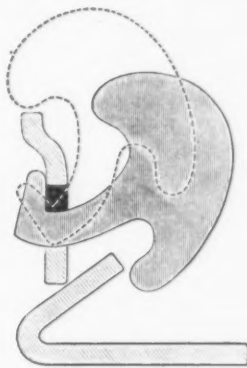
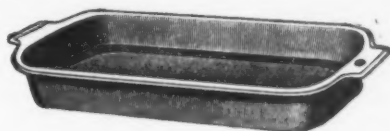


Fig. 4.—Sill Catch in Use.

unlocked without lifting the blind. The hinges are applied in substantially the same manner as those ordinarily in use, and require the same number and sizes of screws. The point is made that the improved sill catch, as shown in Figs. 3 and 4, prevents the closed blind from being opened from the outside. Each dozen sets is packed in a neat paper box.

The Seamless Flanged Drip Pan.

The Bellaire Stamping Company, Harvey, Ill., are putting on the market a drip pan which is herewith illustrated. This pan is made of a single piece, with



Seamless Flanged Drip Pan.

no wire handles nor with wire beaded into the edge to stiffen it. The best quality of Siemens-Martin pickled and cold-rolled steel is used. This steel is drawn into shape by means of dies, and is finished

plain, tinned or enameled, and in sizes running from 8 x 10 to 12 x 17.

The Maryland Roaster and Baker.

Matthai, Ingram & Co., Baltimore, Md., have placed on the market the improved



The Maryland Roaster and Baker.

roaster and baker represented in the illustration given herewith. The utensil is made of sheet steel, in three sizes, which nest closely. The fittings and attach-

Granite Iron Tea and Coffee Pots.

St. Louis Stamping Company, St. Louis, Mo., are offering a line of the above goods, as shown in the accompanying cuts. They



Fig. 1.—Granite Iron Tea Pot.

are mounted with enameled wood handles, which not only gives them an attractive appearance, but, it is claimed, renders it possible to take hold of the handle without being burned, as the handles are cold.



Fig. 2.—Granite Iron Coffee Pot.

In addition to the handle the cover is of a new fluted style, highly polished, and has an improved hinge.

That part of our ocean marine employed in the Mexican trade appears to be in a flourishing condition. Minister Ryan says that during the year 1891 more American steamers entered the Mexican ports than those of all the other nations of the world combined, and that Mexico's domestic or internal commerce was carried by more American steamships and sailing vessels than those of all other nations, with the single exception of Mexico itself.

Shaw's Calf Weaner.

Carroll Muzzle Company, Carroll, Iowa, are offering this weaner, as shown in the accompanying cuts. A wire muzzle is strapped over the nose of the calf in such a manner as to allow free play on the nose;

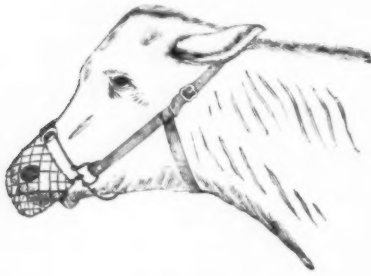


Fig. 1.—Shaw's Calf Weaner.

so that the animal is not prevented from eating, Fig. 2, but so that the muzzle falls over the mouth when the nose is elevated, Fig. 1, effectually preventing sucking. It is claimed to be an absolute preventive, and it is also stated that it does not cause sore udders. The point is made



Fig. 2.—Shaw's Weaner when Feeding.

that should the weaner get loosened and be dropped in the field, no injury would ensue should a colt or other animal step upon it.

Lebanon Beater.

Seltzer Specialty Company, Lebanon, Pa., are introducing this article, as illustrated in Fig. 1. A cast plunger is attached to the lower end of the handle rod, exactly fitting the inside of the two interchangeable perforated hoppers. The perforations



Fig. 1.—Lebanon Beater.

in one hopper are finer than those in the other. A substantial spring with one end attached near the enameled wood handle, and the other end to the collar frame, draws the plunger handle up when liberated from the hand. The hoppers can

be removed or adjusted by means of simple locking device to the cast collar. The perforations in the hoppers are adapted to the different uses to which they are put. The beater, including hopper,



Fig. 2.—Beating Eggs.

measures 13 inches in length, the hoppers 2½ inches inside; while all parts are strong and are either tinned or nickel plated. The article combines several household appliances, and is recommended for mashing potatoes, stewed apples, pumpkins, turnips, beating eggs, whipping cream, pressing



Fig. 3.—Mashing Potatoes.

fruits, &c. It is stated that eggs may be beaten, as shown in Fig. 1, in one minute. Fruit or vegetables are mashed in the kettle in which they were cooked, Fig. 2, thus keeping them hot while being prepared for use.

CONTENTS.

	PAGE.
The Turner Rotary Motor, Pump and Meter. Illustrated	275
A Boom in Shipbuilding.....	276
The Hatch Drop Hammer. Illustrated.....	277
How Declining Silver Affects Trade	277
Seabury's Breech Mechanism for Rapid-Firing Artillery. Illustrated ..	278
The Corning Steel Company.....	280
Ridgway Steam-Hydraulic Crane. Illus.	281
World's Fair Notes.....	282
The Crops.....	283
Photography in Mechanics.....	284
Automatic Self-Closing Hatch Doors. Ill.	285
The Fellows Steam Steering Gear. Illus.	286
The Brainard Bale-Tie Machines. Illus.	287
San Francisco News.....	287
Combined Steam and Hand Power Elevator. Illustrated	288
The Schuff Steam-Pressure Regulator. Ill.	288
World's Fair Buildings.....	288
The Week	289
Editorials:	
The Day of Small Margins.....	290
The Charcoal Pig Iron Trade.....	290
The Maturing Crops.....	290
The Tin-Plate Makers vs. Jobbers.....	291
Cheap Railroad Fares.....	291
Southern Forge Pig for Foundry Work.....	291
Obituary.....	291
The Cost of Tin Plate.....	292
The New Iron Scale.....	293
The Jobbing Mill Scale.....	293
Washington News.....	294
The Steel Scale Signed.....	294
Rolling Mill Wages.....	294
The Homestead Trouble.....	294
Manufacturing:	
Iron and Steel	295
Machinery.....	296
Hardware.....	296
Miscellaneous.....	296
Trade Report:	
Philadelphia.....	297
Chicago.....	298
Cincinnati.....	299
Pittsburgh.....	299
St. Louis.....	301
New York.....	301
Metal Market	301
British Iron and Metal Markets.....	302
Hardware:	
Condition of Trade.....	303
Notes on Prices.....	304
Australian Trade.....	305
A New Hardware Jobbers' Association.....	306
Trade Items.....	306
The Bellaire Stamping Company.....	306
Louisville.....	307
Price-Lists, Circulars, &c.....	307
It is Reported—.....	307
Paints and Colors.....	308
Wrought-Steel Gravity Blind Hinges and Catch. Illustrated.....	309
The Seamless Flanged Drip Pan. Illus.	309
The Maryland Roaster and Baker. Illus.	309
Granite Iron Tea and Coffee Pots. Illus.	309
Shaw's Calf Weaner. Illustrated.....	310
Lebanon Beater. Illustrated	310
Current Hardware Prices.....	311
Current Metal Prices.....	313

Current Hardware Prices.

AUGUST 17, 1892.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers at the figures named.

The character @ is used to indicate a range of price; thus discount 50&100 at 50&100&5 signifies that the goods in question are sold at prices ranging from discount 50 and 10 % to discount 50 and 10 and 5 %.

Adjusters, Blind—

Domestic..... per doz \$3.00, 33 1/2¢
Excelsior..... per doz \$10.00, 10 1/2¢
North's..... list net @ 10¢
Zimmerman's—See Fasteners Blind.

Ammunition—See Caps, Cartridges, Shells, &c

Anvils—

Eagle Anvils, per lb 10¢..... 15¢ to 15 1/2¢
Peter Wright's..... 11¢ to 11 1/2¢
Armstrong's Mouse Hole..... 10 1/2¢ to 11¢
Am. Wrought, Horse shoe brand, 11¢ to 11 1/2¢
Trenton..... 10 1/2¢ to 11¢
Wilkinson's..... 10 1/2¢ to 11¢
Moore & Barnes Mfg. Co..... 33 1/2¢

Anvil Vise and Drill—

Millers Falls Co., \$18.00..... 20¢
Cheney Anvil and Vise..... 25¢
Allen Anvil and Vise, \$3.00..... 40¢ to 10¢
Star..... 45¢ to 5¢

Apple Parers—See Parers, Apple, &c.

Augers and Bits—

Douglass Mfg. Co..... 70¢ to 100¢
Wm. A. Ives & Co..... 70¢ to 100¢
Humphreysville Mfg. Co..... 70¢ to 100¢
French, Swift & Co. (F. H. Beecher)..... 70¢ to 100¢
P. S. & W. Co..... 70¢ to 100¢
Rockford Bit Company..... 55¢
Cook's, Douglass Mfg. Co. Bits, per set..... 60¢ to 100¢
Cook's, N. H. Copper Co. 50&100 to 50&100&5
Ives' Circular Lip..... 60¢
Patent Solid Head..... 30¢
C. E. Jennings & Co., No. 10, extension lip..... 40¢
C. E. Jennings & Co., No. 30..... 60¢
C. E. Jennings & Co., Auger Bits, per set, 32 1/2 quaters, No. 5, \$5; No. 30, \$3.50, 20¢
Lewis' Patent Single twist..... 45¢
Russell Jennings' Augers and Bits, 25¢ to 10¢
Imitation Jennings' Bits..... 20¢
Pugh's Black..... 20¢
Pugh's Jennings Pattern..... 30¢
Car Bits..... 30¢ to 100¢
Car Bits, P. S. & W. Co..... 60¢ to 10¢
Snell's Car Bits..... 60¢
L'Hommedieu Car Bits..... 15¢ to 10¢
Forstner Pat. Auger Bits..... 20¢
Cincinnati Bell-Hangers' Bits..... 30¢ to 10¢

Bit Stock Drills—

Morse Twist Drills..... 50¢ to 100¢
Standard..... 50¢ to 100¢
Cleveland..... 50¢ to 100¢
Syracuse, for metal..... 50¢ to 100¢
Syracuse, for wood (wood list)..... 30¢ to 100¢
Cincinnati, for wood..... 30¢ to 100¢
Cincinnati, for metal..... 45¢ to 100¢

Expansive Bits—

Clark's small, \$18; large, \$26..... 35¢ to 35¢ to 10¢
Ives' No. 4, per doz. \$80..... 40¢
Swan's..... 40¢
Steer's, No. 1, \$26; No. 2, \$22..... 35¢
Stearns' No. 2, \$48..... 20¢

Gimlet Bits—

Common..... per gross \$2.75 to \$3.25
Diamond..... per doz \$1.25..... 40¢ to 10¢
Bee..... 25¢ to 25¢
Double Cut, Shepardson's..... 45¢ to 45¢ to 10¢
Double Cut, Ct. Valley Mfg. Co..... 30¢ to 10¢
Double Cut, Hartwell's, per gross..... 85¢ to 25¢
Double Cut, Douglass..... 40¢ to 10¢
Double Cut, Ives..... 60¢ to 100¢

Hollow Augers—

Ives'..... 33 1/2¢ to 33 1/2¢
French, Swift & Co..... 41¢
Douglass..... 30¢ to 100¢
Bonney's Adjustable, per doz \$48..... 40¢ to 10¢
Stearns'..... 40¢ to 100¢
Ives' Expansive, each \$4.50..... 50¢ to 5¢
Universal Expansive, each \$4.50..... 30¢
Wood's..... 25¢ to 25¢ to 10¢
Cincinnati Adjustable..... 25¢ to 10¢
Cincinnati Standard..... 25¢ to 10¢

Ship Augers and Bits—

L'Hommedieu's..... 15¢ to 10¢ to 15¢ to 10¢
Watrous'..... 15¢ to 10¢ to 15¢ to 10¢
Snell's..... 15¢ to 10¢ to 15¢ to 10¢
Snell's Ship Auger Pat'n Car Bits, 15¢ to 10¢ to 15¢ to 10¢

Awl Hafts—See Hafts, Awl.

Awls—

Awls, Sewing, Common..... per gr. 85¢ to 90¢
Awls, Should, Peg..... per gr. \$1.50 to \$1.55
Awls, Pat. Peg..... per gr. 35¢ to 38¢
Awls, Shouldered Brad..... per gr. \$1.30 to 1.40
Awls, Handled Brad..... per gr. \$2.50 to \$3.00
Awls, Handled Scratch..... per gr. \$4.00 to 4.50
Awls, Socket Scratch..... per doz. \$1.10 to \$1.30

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

First quality, best brands, \$7.00..... @ \$7.50
First qual., other brands..... 6.50 @ 7.00
Second quality..... 5.50 @ 6.00

Axle Grease—See Grease, Axle.

Axles—

No. 1, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000, 1001, 1002, 1003, 1004, 1005, 1006, 1007, 1008, 1009, 1010, 1011, 1012, 1013, 1014, 1015, 1016, 1017, 1018, 1019, 1020, 1021, 1022, 1023, 1024, 1025, 1026, 1027, 1028, 1029, 1030, 1031, 1032, 1033, 1034, 1035, 1036, 1037, 1038, 1039, 1040, 1041, 1042, 1043, 1044, 1045, 1046, 1047, 1048, 1049, 1050, 1051, 1052, 1053, 1054, 1055, 1056, 1057, 1058, 1059, 1060, 1061, 1062, 1063, 1064, 1065, 1066, 1067, 1068, 1069, 1070, 1071, 1072, 1073, 1074, 1075, 1076, 1077, 1078, 1079, 1080, 1081, 1082, 1083, 1084, 1085, 1086, 1087, 1088, 1089, 1090, 1091, 1092, 1093, 1094, 1095, 1096, 1097, 1098, 1099, 1100, 1101, 1102, 1103, 1104, 1105, 1106, 1107, 1108, 1109, 1110, 1111, 1112, 1113, 1114, 1115, 1116, 1117, 1118, 1119, 1120, 1121, 1122, 1123, 1124, 1125, 1126, 1127, 1128, 1129, 1130, 1131, 1132, 1133, 1134, 1135, 1136, 1137, 1138, 1139, 1140, 1141, 1142, 1143, 1144, 1145, 1146, 1147, 1148, 1149, 1150, 1151, 1152, 1153, 1154, 1155, 1156, 1157, 1158, 1159, 1160, 1161, 1162, 1163, 1164, 1165, 1166, 1167, 1168, 1169, 1170, 1171, 1172, 1173, 1174, 1175, 1176, 1177, 1178, 1179, 1180, 1181, 1182, 1183, 1184, 1185, 1186, 1187, 1188, 1189, 1190, 1191, 1192, 1193, 1194, 1195, 1196, 1197, 1198, 1199, 1200, 1201, 1202, 1203, 1204, 1205, 1206, 1207, 1208, 1209, 1210, 1211, 1212, 1213, 1214, 1215, 1216, 1217, 1218, 1219, 1220, 1221, 1222, 1223, 1224, 1225, 1226, 1227, 1228, 1229, 1230, 1231, 1232, 1233, 1234, 1235, 1236, 1237, 1238, 1239, 1240, 1241, 1242, 1243, 1244, 1245, 1246, 1247, 1248, 1249, 1250, 1251, 1252, 1253, 1254, 1255, 1256, 1257, 1258, 1259, 1260, 1261, 1262, 1263, 1264, 1265, 1266, 1267, 1268, 1269, 1270, 1271, 1272, 1273, 1274, 1275, 1276, 1277, 1278, 1279, 1280, 1281, 1282, 1283, 1284, 1285, 1286, 1287, 1288, 1289, 1290, 1291, 1292, 1293, 1294, 1295, 1296, 1297, 1298, 1299, 1300, 1301, 1302, 1303, 1304, 1305, 1306, 1307, 1308, 1309, 1310, 1311, 1312, 1313, 1314, 1315, 1316, 1317, 1318, 1319, 1320, 1321, 1322, 1323, 1324, 1325, 1326, 1327, 1328, 1329, 1330, 1331, 1332, 1333, 1334, 1335, 1336, 1337, 1338, 1339, 1340, 1341, 1342, 1343, 1344, 1345, 1346, 1347, 1348, 1349, 1350, 1351, 1352, 1353, 1354, 1355, 1356, 1357, 1358, 1359, 1360, 1361, 1362, 1363, 1364, 1365, 1366, 1367, 1368, 1369, 1370, 1371, 1372, 1373, 1374, 1375, 1376, 1377, 1378, 1379, 1380, 1381, 1382, 1383, 1384, 1385, 1386, 1387, 1388, 1389, 1390, 1391, 1392, 1393, 1394, 1395, 1396, 1397, 1398, 1399, 1400, 1401, 1402, 1403, 1404, 1405, 1406, 1407, 1408, 1409, 1410, 1411, 1412, 1413, 1414, 1415, 1416, 1417, 1418, 1419, 1420, 1421, 1422, 1423, 1424, 1425, 1426, 1427, 1428, 1429, 1430, 1431, 1432, 1433, 1434, 1435, 1436, 1437, 1438, 1439, 1440, 1441, 1442, 1443, 1444, 1445, 1446, 1447, 1448, 1449, 1450, 1451, 1452, 1453, 1454, 1455, 1456, 1457, 1458, 1459, 1460, 1461, 1462, 1463, 1464, 1465, 1466, 1467, 1468, 1469, 1470, 1471, 1472, 1473, 1474, 1475, 1476, 1477, 1478, 1479, 1480, 1481, 1482, 1483, 1484, 1485, 1486, 1487, 1488, 1489, 1490, 1491, 1492, 1493, 1494, 1495, 1496, 1497, 1498, 1499, 1500, 1501, 1502, 1503, 1504, 1505, 1506, 1507, 1508, 1509, 1510, 1511, 1512, 1513, 1514, 1515, 1516, 1517, 1518, 1519, 1520, 1521, 1522, 1523, 1524, 1525, 1526, 1527, 1528, 1529, 1530, 1531, 1532, 1533, 1534, 1535, 1536, 1537, 1538, 1539, 1540, 1541, 1542, 1543, 1544, 1545, 1546, 1547, 1548, 1549, 1550, 1551, 1552, 1553, 1554, 1555, 1556, 1557, 1558, 1559, 1560, 1561, 1562, 1563, 1564, 1565, 1566, 1567, 1568, 1569, 1570, 1571, 1572, 1573, 1574, 1575, 1576, 1577, 1578, 1579, 1580, 1581, 1582, 1583, 1584, 1585, 1586, 1587, 1588, 1589, 1590, 1591, 1592, 1593, 1594, 1595, 1596, 1597, 1598, 1599, 1600, 1601, 1602, 1603, 1604, 1605, 1606, 1607, 1608, 1609, 1610, 1611, 1612, 1613, 1614, 1615, 1616, 1617, 1618, 1619, 1620, 1621, 1622, 1623, 1624, 1625, 1626, 1627, 1628, 1629, 1630, 1631, 1632, 1633, 1634, 1635, 1636, 1637, 1638, 1639, 1640, 1641, 1642, 1643, 1644, 1645, 1646, 1647, 1648, 1649, 1650, 1651, 1652, 1653, 1654, 1655, 1656, 1657, 1658, 1659, 1660, 1661, 1662, 1663, 1664, 1665, 1666, 1667, 1668, 1669, 1670, 1671, 1672, 1673, 1674, 1675, 1676, 1677, 1678, 1679, 1680, 1681, 1682, 1683, 1684, 1685, 1686, 1687, 1688, 1689, 1690, 1

Chalk Lines—See Lines.**Chisels—****Socket Framing and Firmer**

P. S. & W.	
New Haven.	
Wetherby.	75¢ 75¢ 10¢
Mix.	
Ohio Tool Co.	75¢ 75¢ 5¢
Douglas.	30¢
Buck Bros.	30¢
Merrill.	60¢ 10¢ 60¢ 10¢ 5¢
L. & I. J. White.	30¢ 30¢ 5¢

Tanged and Miscellaneous.

Tanged Firmer.	40¢ 10¢ 50¢
Butcher's.	\$4.75 to \$5.00
Spear & Jackson's.	\$5 to \$6
Buck Bros.	30¢
Cold Chisels.	15¢ 10¢

Chucks—

Beach Pat.	each, \$8.00	20¢
Morse's Adjustable.	each, \$7.00	30¢ 30¢ 5¢
Danbury.	each, \$6.00	30¢ 30¢ 5¢
Syracuse.	each, \$5.00	25¢
Graham Patent.		33¢ 4¢
Skinner's Patent Chucks.		33¢ 4¢
Combination Lathe Chucks.		40¢
Universal Lathe Chucks.		40¢
Independent Lathe Chucks.		40¢
Drill Chucks.		15¢
Union Mfg. Co.		25¢
Victor.	\$8.50	25¢
Combination.		40¢
Universal.		40¢
Independent.		40¢

Churns—

Tiffin Union.	each, 5 gal. \$3.25; 7 gal. \$3.75; 10 gal. \$4.25
McDermid Star Barrel Churn.	each, 6 gal. \$2.90; 10 gal. \$2.75; 15 gal. \$3.00; 20 gal. \$3.25

Clamps—

R. I. Tool Co.'s Wrought Iron.	25¢
Adjustable, Cincinnati.	15¢ 10¢
Adjustable, Hammers.	15¢
Adjustable, Stearns.	30¢ 30¢ 10¢
Stearns' Adjustable Cabinet and Corner.	30¢ 30¢ 10¢
Cabinet, Sargent's.	60¢ 60¢ 10¢
Carriage Makers', Sargent's.	70¢ 10¢
Carriage Makers', P. S. & W. Co.	40¢ 10¢
Eberhard Mfg. Co.	40¢ 5¢ 40¢ 10¢
Warner's.	40¢ 10¢ 40¢ 10¢ 5¢
Saw Clamps, see Vices, Saw Filers.	
Carpenter's, Cincinnati.	25¢ 10¢

Cleavers, Butchers'—

Bradley's.	25¢ 30¢
L. & I. J. White.	20¢ 5¢
Beatty's.	40¢ 40¢ 5¢
New Haven Edge Tool Co.'s.	40¢
P. S. & W.	33¢ 5¢ 33¢ 5¢ 10¢
Foster Bros.	30¢
Schulte, Lohoff & Co.	40¢ 40¢ 5¢

Clips—

Norway, Axle, 1/2 & 5-16.	55¢ 5¢ 5¢
2d grade Norway Axle, 1/2 & 5-16.	65¢ 5¢
Superior Axle Clips.	60¢ 5¢ 70¢
Norway Spring Bar Clips, 5-16.	60¢ 5¢ 5¢
Wrought Iron Felloe Clips.	5¢
Steel Felloe Clips.	5¢
Baker Axle Clips.	25¢

Cloth and Netting, Wire

—See Wire, &c.

Cockeyes—

Hardware list.	50¢ 25¢
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Cocks, Brass—

Hardware list.	50¢ 25¢
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Coffee Mills—See Mills, Coffee.**Collars, Dog—**

Chapman Mfg. Company.	50¢ 10¢ 40¢
Medford Fancy Goods Co.	40¢ 10¢ 50¢
Embossed, Gift, Pope & Steven's list.	30¢ 10¢

Leather, Pope & Steven's list.	40¢
Brass, Pope & Steven's list.	40¢

Combs, Curry—

Fitch's.	50¢ 10¢ 50¢ 10¢ 10¢
Rubber, per doz.	\$10.00
American Curry Comb Co.	Net prices

Compasses, Dividers, &c.

Compasses, Calipers, Dividers.	70¢ 70¢ 10¢
Bemis & Call Co.'s	
Dividers.	60¢ 5¢
Compasses and Calipers.	50¢ 5¢
Wing and Inside or Outside.	60¢ 5¢
Double.	60¢
Call's Patent Inside.	30¢
Excelsior.	50¢
J. Stevens & Co.'s.	25¢ 10¢
Starrett's	
Spring Calipers and Dividers.	25¢ 10¢
Lock Calipers and Dividers.	25¢
Combination Dividers.	25¢

Coopers' Tools—

—See Tools, Coopers'.

Cord—

Common.	10¢ 10¢ 11¢
Patent, good quality.	12¢ 12¢ 25¢
White Cotton Braided, fair.	24¢ 25¢
Common Russia Sash.	12¢ 12¢ 13¢
Patent Russia Sash.	14¢
Cable Laid Italian Sash.	21¢ 22¢
India Cable Laid Sash.	12¢
Silver Lake.	
A quality, White, 50¢.	25¢
A quality, Drab, 50¢.	25¢
B quality, White, 30¢.	10¢
B quality, Drab, 30¢.	10¢
Sylvan Spring, Extra Braided, White.	34¢
Sylvan Spring, Extra Braided, Drab.	30¢
Semper Idem, Braided, White.	30¢
Egyptian, India Hemp, Braided.	26¢
Massachusetts, White.	26¢
Samson.	
Braided, White Cotton, 50¢.	30¢ 30¢ 5¢
Braided, Drab Cotton, 50¢.	30¢ 30¢ 5¢
Braided, Italian Hemp, 55¢.	30¢ 30¢ 5¢
Braided, Linen, 80¢.	30¢ 30¢ 5¢
Tate's Cotton Braided, White.	28¢

Wire Picture—

Braided or Twisted. 75¢ 10¢

Corkscrews—See Screws, Cork.**Corn Knives and Cutters**

—See Knives, Corn.

Crackers, Nut—

Table (H. & B. Mfg. Co.)	40¢
Blake's Pattern, per doz.	\$2.00
Turner & Seymour Mfg. Co.	50¢

Cradles—

Grain.	50¢ 5¢ 2¢ 50¢ 10¢ 2¢
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Crayons—

White Crayons, per gross.	10¢
D. M. Stewart Mfg. Co., Metal Work-	
ers', per gross, \$2.50.	25¢
D. M. Stewart Mfg. Co., Rolling Mill,	
per gross, \$2.50.	25¢
See also Chalk.	

Crow Bars—See Bars, Crow.**Curry Combs—**

—See Combs, Curry.

Curtain Pins—

—See Pins, Curtain.

Cutters—**Meat—**

Dixon's, per doz.	40¢ 5¢
Nos. 1 2 3 4	
\$1.00 \$1.70 \$1.00 \$3.00	
Woodruff's, per doz.	150
Nos. 1 2 3 4	
\$1.50 \$1.80	
Hale's Pattern, per doz.	70¢ 70¢ 5¢
Nos. 1 2 3 4	
\$2.70 \$3.00 \$4.50	
American.	30¢
Nos. 1 2 3 4	
\$5 \$7 \$10 \$25 \$50 \$90	
Enterprise.	30¢
Nos. 1 2 3 4	
\$3 \$2.50 \$4 \$6 \$15	
Great American Meat Cutter.	30¢
Nos. 1 2 3 4	
\$12 \$16 \$18 \$20	
Each, \$2.00 \$2.75 \$3.00 \$3.50 \$4.00	
Miles' Challenge, per doz.	45¢ 45¢ 10¢
Nos. 1 2 3 4	
\$22.00 \$30.00 \$40.00	
Home No. 1, per doz.	\$26.00
Draw Cut, each:	
Nos. 5 6 7 8	
\$50 \$75 \$90 \$225	20¢ 25¢
Beef Shavers (Enterprise).	30¢ 10¢ 30¢
Little Giant (P. S. & W. Co.)	50¢
Chadborn's Smoked Beef Cutter, per doz.	\$90.00

Tobacco—

Champion.	20¢ 10¢ 30¢
All Iron.	per doz., \$4.25
Nashua Lock Co.'s.	per doz., \$18.00
Wilson's.	55¢
Sargent's.	per doz., \$24.00
Acme.	per doz., \$30.00

Washer—

Smith's Pat.	per doz., \$12.00
Johnson's.	per doz., \$11.00
Penny's.	per doz., \$14.00
Appleton's.	per doz., \$16.00
Bonney's.	per doz., \$20.00
Cincinnati.	per doz., \$25.00

Dampers, &c.—

Dampers, Buffalo.	40¢ 10¢
Buffalo Dampers Clips.	40¢ 10¢
Crown Damper.	40¢
Excelsior.	40¢ 10¢

Diggers, Post Hole, &c.—

Samson post Hole Digger, per doz.	\$26.00
Fletcher Post Hole Augers, per doz.	\$36.00
Eureka Diggers.	per doz., \$12.50
Leed's.	per doz., \$8.00
Vaughan's Post Hole Auger, per doz.	\$13.00
Kohler's Little Giant.	per doz., \$18.00
Kohler's Hercules.	per doz., \$15.00
Kohler's New Champion.	per doz., \$3.00
Schneider.	per doz., \$18.00
Ryan's Post Hole Diggers.	per doz., \$24.00
Cronk's Post Bars.	per doz., \$90.00
Gibb's Post Hole Digger.	per doz., \$15.00
Imperial.	per doz., \$15.00
Shimer's Hollow Handle.	per doz., \$24.00

Dividers—See Compasses.**Dog Collars—See Collars, Dog.****Door Springs—**

—See Springs, Door.

Drawers.

Money, per doz.	\$18 to \$20
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Drawing Knives—

—See Knives, Drawing.

Drills and Drill Stocks—

Blacksmith's Self-Feeding.	each \$7.50
Blacksmith's.	each \$7.50
Preest, P. S. & W.	40¢ 10¢
Breast, Wilson's.	30¢ 5¢
Breast, Millers Falls.	each \$3.00
Breast, Bartholomew's.	each \$2.50
25¢ 10¢ 40¢	
Ratchet, Merrill's.	20¢ 20¢ 5¢
Ratchet, Ingersoll's.	25¢
Ratchet, Parker's.	20¢ 20¢ 5¢
Ratchet, Whitney's.	20¢ 10¢
Ratchet, Weston's.	20¢ 25¢
Ratchet, Moore's Triple Action.	25¢ 30¢
Ratchet, Curtis & Curtis.	30¢
Whitney's Hand Drill, Plain.	\$11.00
Adjustable.	\$12.00
Wilson's Drill Stocks.	10¢
Automatic Boring Tools.	\$1.75 to \$1.85

Twist Drills—

Cleveland.	50¢ 10¢ 5¢
Diamond, W. & B.	50¢ 10¢ 5¢
Graham's Pat. Groove Shank.	50¢ 10¢ 5¢
Morse.	50¢ 10¢ 5¢
New Process.	50¢ 10¢ 5¢
Standard.	50¢ 10¢ 5¢
Syracuse (Metal list).	60¢ 10¢

Drill Bits or Bit Stock

—See Augers and Bits.

Drill Chucks—See Chucks.**Dripping Pans—**

—See Pans, Dripping.

Drivers, Screw—

Douglas Mfg. Co.	20¢ 20¢ 10¢
Dission's.	50¢
Buck Bros.	30¢
Stanley R. & L. Co.'s	
No. 64, Varnished Handles.	65¢ 10¢
No. 86.	70¢ 10¢
Sargent & Co.'s	
No. 1, Forged Blade.	90¢ 10¢ 10¢
Nos. 20, 30 and 60.	60¢ 5¢ 10¢ 10¢
P. S. & W.	70¢
Knapp & Cowles	
No. 1.	60¢ 20¢ 70¢
No. 2.	60¢ 10¢ 10¢ 70¢ 5¢
No. 3.	60¢ 5¢ 60¢ 10¢
Nos. 4 and 00, Acme and Ideal.	50¢ 50¢

Stearns'.	25¢ 10¢ 5¢
Gay & Parsons.	35¢
Champion.	25¢ 10¢
Clark's Pat.	30¢ 33¢ 4¢
Crawford's Adjustable.	30¢
Ellrich's Socket and Ratchet.	25¢ 25¢ 10¢
Alford's Spiral new.	50¢
Kolb's Common Sense.	per doz., \$5.00
Syracuse Screw-Drive Bits.	30¢ 30¢ 5¢
Screw Driver Bits.	per doz., 50¢ 75¢
Screw Driver Bits, Farr's.	per gross, \$6.25
Fry's Hol. H'dle Sets.	No. 3, \$12.00, 45¢
P. S. & Co.'s All Steel.	50¢
Cincinnati.	25¢ 10¢
Brace Screw Drivers.	25¢ 10¢
Buck Bros' Screw Driver Bits.	27¢ 45¢ 5¢
Goodell's Automatic.	50¢
Mayhew's Black Handle.	50¢
Mayhew's Monarch.	45¢ 30¢

Egg Beaters—See Beaters, Egg**Egg Poachers—**

—See Poachers, Egg.

Electric Bell Sets—

—See Bells, Electric.

Emery—No. 4 to No. 54 to Flour, CF.

Kegs, per doz.	46 gr. 150 gr. F.F.F.
1/2 kegs, per doz.	44¢ 5¢ 24¢
3/4 kegs, per doz.	44¢ 5¢ 24¢
10-12 cans, 10	5¢
10-12 cans, less	6¢ 5¢
than 10.	10¢ 10¢

Enameled and Tinned Ware—See Ware, Hollow.**Escutcheon Pins—**

—See Pins, Escutcheon.

Escutcheons—

Door Lock.	Same dis. as Door Locks.
Brass Thread.	60¢ 60¢ 10¢
Wood.	25¢

Expanded Metal—

List No. 5.

Lathing.	10¢
Fencing, Painted Sheets.	20¢
Netting, Painted Sheets.	20¢
Door Mats, Galvanized.	25¢
Window Guards, Painted.	15¢
Tree Guards, Painted.	15¢

Extractors, Lemon Juice

—See Squeezers, Lemon.

Fasteners, Blind—

Mackrell's, per doz.	\$1.00
Van Sand's Screw Pat.	\$15 per gr.
Van Sand's Old Pat.	\$15 per gr.
Austin & Eddy No. 2008.	per gr., \$9.00
Security Gravity.	per gr., \$9.00
Zimmerman's.	45¢

Faucets—

Fenn's.	40¢
Bohren's Pat. Rubber Ball.	25¢
Fenn's Cork Stops.	30¢ 5¢
Star.	60¢
Frary's Pat. Petroleum.	40¢ 5¢ 2¢
R. & L. B. Co.	
West's Lock, Open and Shut Key.	50¢
Star, Metal Plug, new list.	40¢
Lockport, Metal Plug, reduced list.	60¢
Metallic Key, Leather Lined.	60¢ 10¢ 10¢

Cork Lined.

Burnside's Red Cedar.	50¢
Burnside's Red Cedar, bbl. lots.	50¢ 10¢
John Sommers'.	
Perfection, Black Block Tin Key.	40¢
IXL, 1st quality, Cork Lined.	50¢
Diamond Lock.	40¢
Perfection, Fla. Red Cedar.	50¢
Goodenough Cedar.	50¢
Boss Metallic Key.	50¢
Reliable Cork Lined.	60¢
Western Pattern Cork Lined.	50¢
Self Measuring.	
Enterprise, per doz.	\$36.00
Lane's, per doz.	\$36.00
Victor.	per doz., \$36.00

Felloe Plates—

—See Plates, Felloe.

Fifth Wheels—

Derby and Cincinnati.	45¢ 5¢
Brewster.	50¢ 5¢

Files—

Nicholson Files, Rasps, &c.....	60¢10¢
Nicholson (X.F.) Files.....	25¢
Nicholson's Royal Files (Seconds).....	75¢
(extra prices on certain sizes)	
G. & H. Barnett (Black Diamond)	
Arcade.....	60¢10¢10¢5¢
Eagle.....	60¢10¢5¢60¢10¢10¢
Other makers, best brands, 60¢10¢60¢20¢	
Fair brands.....	60¢10¢10¢70¢5¢
Second quality.....	70¢10¢75¢10¢
Heller's Horse Rasps.....	50¢7¢60¢10¢
McCahey's Horse Rasps.....	50¢10¢
Chelsea Horse Rasps, Hand.....	50¢10¢
Arcade Horse Rasps.....	60¢10¢

Halters—

Covert's Rope, Jute.....	60¢10¢10¢10¢
Covert's Rope, 7-16-in. Jute.....	70¢2¢
Covert's Rope, 1/4-in. Hemp.....	50¢2¢
Covert's Adj. Rope Halters.....	40¢2¢
Covert's Hemp Horse and Cattle Tie.....	50¢2¢
Covert's Jute Horse Ties.....	50¢2¢
Covert's Jute Cattle Ties.....	70¢10¢2¢
Covert's Adj. Web Halters.....	35¢5¢2¢
E. Covert Mfg. Co.'s Halters.....	33¢4¢
E. Covert Mfg. Co.'s Horse and Cattle Ties.....	33¢4¢

Hammers—**Handled Hammers—**

Maydole's Hammer, 1, 85.....	25¢10¢35¢
Buffalo Hammer Co.....	50¢50¢10¢
Humason & Beckley.....	50¢50¢10¢
Atha Tool Co.....	50¢50¢10¢
Verree.....	40¢10¢
C. Hammond & Son.....	40¢10¢
Fayette R. Plumb.....	40¢10¢
Artisans' Choice, A. E. Nail.....	40¢10¢
Regular Y. & P. E. Nail.....	50¢
Shoeshoe Turning Hammers.....	50¢
Other Hammers.....	50¢10¢
Cheney's Claw.....	40¢10¢
Cheney's Machinist's & Riveting.....	50¢5¢
Hartford, Nail Hammers.....	40¢5¢
Hartford, Macinists, &c.....	50¢5¢5¢10¢
Magnetic Tack, Nos. 1, 2, 3, 1.25, 1.50 & 1.75.....	30¢10¢
Nelson Tool Works.....	40¢10¢
Warner & Nobles, new list.....	25¢10¢
Peck, Stow & Wilcox.....	40¢
Sargent's.....	33¢5¢10¢

Heavy Hammers and Sledges—

3 lb and under.....	40¢
3 to 5 lb.....	70¢70¢10¢
Over 5 lb.....	30¢
Wilkinson's Smiths.....	10¢4¢11¢

Handcuffs and Leg Irons—

See Police Goods.

Handles—**Cross-Cut Saw Handles—**

Atkins' No. 1 Loop, wpr., 28¢; No. 3, 18¢; No. 6, 15¢; No. 2 and No. 4, Reversible, 18¢.	
Champion.....	15¢

Iron, Wrought or Cast—

Door or Thumb.....	
Nos. 0 1 2 3 4.....	
Per doz.....	\$0.90 1.00 1.10 1.35 1.50
Roggin's Latches.....	40¢10¢35¢
Bronze Iron Drop Latches.....	70¢
Jap'd Store Door Latches—Nuts, 1.62; Plate, 1.10; no plate, 0.88.....	net
Barn Door, wpr. doz.....	1.40
Chest and Lifting.....	70¢

Wood—

Saw and Plane.....	40¢10¢40¢10¢5¢
Hammer, Hatchet, Axe, &c.....	40¢40¢5¢
Brad & W.....	40¢40¢5¢
Hickory Firmer Chisel, ass'd.....	40¢40¢5¢
Hickory Firmer Chisel, large.....	50¢
Apple Firmer Chisel, ass'd.....	50¢
Apple Firmer Chisel, large.....	60¢
Socket Firmer Chisel, ass'd.....	50¢
Socket Framing Chisel, ass'd.....	50¢
J. B. Smith & Co.'s Pat. File.....	50¢
File, assorted.....	27¢
Auger, assorted.....	50¢
Auger, large.....	70¢
Pat. Auger, Ives.....	30¢10¢
Pat. Auger, Douglass.....	1.15
Pat. Auger, Swan's.....	1.15
Hoe, Rake, Shovel, &c.....	50¢10¢

Hangers—

Barn Door, old patterns.....	60¢10¢10¢70¢
Barn Door, New England.....	60¢10¢10¢70¢
Samson Steel Anti-Friction.....	55¢
Orleans Steel.....	55¢
Hamilton Wrought Steel Track.....	55¢
U. S. Wood Track.....	65¢
Champion.....	60¢10¢
Rider and Wooster, Medina Mfg. Co.'s list.....	70¢
Climax Anti-Friction.....	55¢
Climax Anti-Friction for Wood Track.....	55¢
Zenith for Wood Track.....	50¢
Reed's Steel Arm.....	50¢
Challenge, Barn Door.....	50¢
Sterling.....	50¢50¢10¢
Victor, No. 1, \$15.00; No. 2, \$16.50; No. 3, \$18.00.....	50¢2¢
Chester.....	40¢10¢50¢
Kidder.....	40¢10¢50¢
Boes.....	60¢10¢
Best Anti-Friction.....	60¢10¢
Duplex (Wood Track).....	60¢10¢5¢
Terry's Pat., wpr. doz pr. 4 in., \$10.00; 5 in., \$12.00.....	50¢10¢
Terry's Steel Anti-Friction Leader.....	50¢10¢
Terry's Steel Anti-Friction Ideal.....	50¢10¢
Cronk's Patent, Steel Covered.....	50¢5¢
Wood Track Iron Clad, wpr. ft. 10¢.....	50¢
Carrier Steel Anti-Friction.....	60¢10¢
Architect, wpr. set \$5.00.....	30¢
Eclipse.....	30¢10¢
Felix, wpr. set \$4.50.....	20¢
Richards.....	30¢30¢10¢
Lane's New Standard.....	50¢50¢5¢
Lane's Standard.....	50¢50¢10¢
Lane's Parlor.....	40¢
Ball Bearing Door Hanger.....	20¢10¢20¢10¢
Warner's Pat.....	20¢10¢20¢10¢10¢
Stearns' Anti-Friction.....	20¢10¢20¢10¢10¢
Stearns' Challenge.....	25¢10¢25¢10¢10¢
Faultless.....	40¢40¢5¢
American, per set \$5.00.....	20¢10¢
Rider & Wooster, No. 1, 22¢; No. 2, 75¢.....	20¢10¢
Paragon, Nos. 1, 2 and 3.....	20¢10¢
Cincinnati.....	25¢10¢
Paragon, Nos. 5, 6, 7 and 8.....	20¢10¢
Crescent.....	60¢60¢10¢
Nickel, Cast Iron.....	50¢
Nickel, Malleable Iron and Steel.....	50¢
Scranton Anti-Friction Single Strap.....	33¢
Wild West, 4 in. Wheel, \$15.00; 5 in. Wheel, \$21.00.....	45¢
Star.....	40¢10¢40¢10¢5¢
May.....	50¢50¢50¢10¢
Barry, \$6.00.....	40¢10¢
Interstate.....	50¢
Magic.....	50¢
Pendulum, Payson's.....	40¢
Moody.....	45¢

Harness Snaps—See Snaps.**Hatchets—**

American Axe and Tool Co.....	
Blood's.....	40 & 10
Hunt's.....	50¢5¢
Hurd's.....	50¢5¢
Mann's.....	50¢5¢
Peck's.....	50¢5¢
Underhill's.....	50¢5¢
Buffalo Hammer Co.....	40 & 10
Fayette R. Plumb.....	50¢5¢
C. Hammond & Son.....	50¢5¢
Kelly's.....	50¢5¢
Sargent's & Co.....	50¢5¢
Ten Eyck Edge Tool Co.....	10¢
Collins.....	50¢50¢5¢
Schulte, Lohoff & Co.....	50¢50¢5¢

Hay and Straw Knives—

See Knives.

Hinges—**Blind Hinges—**

Parker.....	75¢2¢
Huffer.....	77¢10¢
Clark's, Nos. 1, 3, 5, 40 and 50.....	75¢10¢50¢80¢
Clark's Mortise Gravity.....	50¢
Sargent's, Nos. 1, 3, 5, 11, 13.....	55¢10¢55¢10¢5¢
Reading's Gravity.....	75¢10¢75¢10¢5¢
Shepard's.....	75¢10¢
Noiseless.....	80¢
Niagara.....	80¢
Buffalo.....	80¢
Clark's Genuine Pattern.....	80¢
O. S. Lull & Porter.....	75¢10¢
Acme, Lull & Porter.....	75¢
Queen City Reversible.....	70¢10¢50¢75¢
Clark's, Lull & Porter, Nos. 0, 1, 1 1/2, 2, 2 1/2, 3.....	75¢10¢2¢
North's Automatic Blind Fixtures, No. 2, for Wood, \$9.00; No. 3, for Brick, \$11.50.....	10¢

Gate Hinges—

Western.....	40¢
N. E.....	40¢
N. E. Reversible.....	40¢
Clark's, Nos. 1, 2, 3.....	40¢10¢5¢
N. Y. State.....	40¢10¢5¢
Automatic.....	40¢10¢5¢
Shepard's.....	40¢10¢5¢

Spring Hinges—

Geer's Spring and Blank Butts.....	40¢
Union Spring Hinge Co.'s list, March, 1886.....	20¢
Barker's Double Acting.....	25¢
Union Mfg. Co.....	25¢
Bommer's.....	30¢
Buckman's.....	15¢20¢
Chicago.....	30¢
Bardsley's Patent.....	40¢
Acme.....	30¢
U. S.....	25¢10¢
Empire and Crown.....	20¢
Hero and Monarch.....	55¢
American, Gem and Star.....	20¢
Oxford.....	20¢
Wiles.....	10¢
Devore's.....	10¢
Rex.....	40¢
Royal.....	60¢
Reliable.....	60¢
Champion.....	60¢
Stearns.....	60¢10¢
Samson, wpr. gross.....	\$14.00

Wrought Iron Hinges—

List February 14, 1891.	
Strap and T.....	50¢10¢5¢
Corrugated Strap and T.....	50¢50¢10¢
Screw Hook and (14 to 20 in., wpr. 3¢; 22 to 30 in., wpr. 3¢; 32 to 40 in., wpr. 4¢; 42 to 50 in., wpr. 4¢; 52 to 60 in., wpr. 4¢; 62 to 70 in., wpr. 4¢; 72 to 80 in., wpr. 4¢; 82 to 90 in., wpr. 4¢; 92 to 100 in., wpr. 4¢; 102 to 110 in., wpr. 4¢; 112 to 120 in., wpr. 4¢; 122 to 130 in., wpr. 4¢; 132 to 140 in., wpr. 4¢; 142 to 150 in., wpr. 4¢; 152 to 160 in., wpr. 4¢; 162 to 170 in., wpr. 4¢; 172 to 180 in., wpr. 4¢; 182 to 190 in., wpr. 4¢; 192 to 200 in., wpr. 4¢; 202 to 210 in., wpr. 4¢; 212 to 220 in., wpr. 4¢; 222 to 230 in., wpr. 4¢; 232 to 240 in., wpr. 4¢; 242 to 250 in., wpr. 4¢; 252 to 260 in., wpr. 4¢; 262 to 270 in., wpr. 4¢; 272 to 280 in., wpr. 4¢; 282 to 290 in., wpr. 4¢; 292 to 300 in., wpr. 4¢; 302 to 310 in., wpr. 4¢; 312 to 320 in., wpr. 4¢; 322 to 330 in., wpr. 4¢; 332 to 340 in., wpr. 4¢; 342 to 350 in., wpr. 4¢; 352 to 360 in., wpr. 4¢; 362 to 370 in., wpr. 4¢; 372 to 380 in., wpr. 4¢; 382 to 390 in., wpr. 4¢; 392 to 400 in., wpr. 4¢; 402 to 410 in., wpr. 4¢; 412 to 420 in., wpr. 4¢; 422 to 430 in., wpr. 4¢; 432 to 440 in., wpr. 4¢; 442 to 450 in., wpr. 4¢; 452 to 460 in., wpr. 4¢; 462 to 470 in., wpr. 4¢; 472 to 480 in., wpr. 4¢; 482 to 490 in., wpr. 4¢; 492 to 500 in., wpr. 4¢; 502 to 510 in., wpr. 4¢; 512 to 520 in., wpr. 4¢; 522 to 530 in., wpr. 4¢; 532 to 540 in., wpr. 4¢; 542 to 550 in., wpr. 4¢; 552 to 560 in., wpr. 4¢; 562 to 570 in., wpr. 4¢; 572 to 580 in., wpr. 4¢; 582 to 590 in., wpr. 4¢; 592 to 600 in., wpr. 4¢; 602 to 610 in., wpr. 4¢; 612 to 620 in., wpr. 4¢; 622 to 630 in., wpr. 4¢; 632 to 640 in., wpr. 4¢; 642 to 650 in., wpr. 4¢; 652 to 660 in., wpr. 4¢; 662 to 670 in., wpr. 4¢; 672 to 680 in., wpr. 4¢; 682 to 690 in., wpr. 4¢; 692 to 700 in., wpr. 4¢; 702 to 710 in., wpr. 4¢; 712 to 720 in., wpr. 4¢; 722 to 730 in., wpr. 4¢; 732 to 740 in., wpr. 4¢; 742 to 750 in., wpr. 4¢; 752 to 760 in., wpr. 4¢; 762 to 770 in., wpr. 4¢; 772 to 780 in., wpr. 4¢; 782 to 790 in., wpr. 4¢; 792 to 800 in., wpr. 4¢; 802 to 810 in., wpr. 4¢; 812 to 820 in., wpr. 4¢; 822 to 830 in., wpr. 4¢; 832 to 840 in., wpr. 4¢; 842 to 850 in., wpr. 4¢; 852 to 860 in., wpr. 4¢; 862 to 870 in., wpr. 4¢; 872 to 880 in., wpr. 4¢; 882 to 890 in., wpr. 4¢; 892 to 900 in., wpr. 4¢; 902 to 910 in., wpr. 4¢; 912 to 920 in., wpr. 4¢; 922 to 930 in., wpr. 4¢; 932 to 940 in., wpr. 4¢; 942 to 950 in., wpr. 4¢; 952 to 960 in., wpr. 4¢; 962 to 970 in., wpr. 4¢; 972 to 980 in., wpr. 4¢; 982 to 990 in., wpr. 4¢; 992 to 1000 in., wpr. 4¢; 1002 to 1010 in., wpr. 4¢; 1012 to 1020 in., wpr. 4¢; 1022 to 1030 in., wpr. 4¢; 1032 to 1040 in., wpr. 4¢; 1042 to 1050 in., wpr. 4¢; 1052 to 1060 in., wpr. 4¢; 1062 to 1070 in., wpr. 4¢; 1072 to 1080 in., wpr. 4¢; 1082 to 1090 in., wpr. 4¢; 1092 to 1100 in., wpr. 4¢; 1102 to 1110 in., wpr. 4¢; 1112 to 1120 in., wpr. 4¢; 1122 to 1130 in., wpr. 4¢; 1132 to 1140 in., wpr. 4¢; 1142 to 1150 in., wpr. 4¢; 1152 to 1160 in., wpr. 4¢; 1162 to 1170 in., wpr. 4¢; 1172 to 1180 in., wpr. 4¢; 1182 to 1190 in., wpr. 4¢; 1192 to 1200 in., wpr. 4¢; 1202 to 1210 in., wpr. 4¢; 1212 to 1220 in., wpr. 4¢; 1222 to 1230 in., wpr. 4¢; 1232 to 1240 in., wpr. 4¢; 1242 to 1250 in., wpr. 4¢; 1252 to 1260 in., wpr. 4¢; 1262 to 1270 in., wpr. 4¢; 1272 to 1280 in., wpr. 4¢; 1282 to 1290 in., wpr. 4¢; 1292 to 1300 in., wpr. 4¢; 1302 to 1310 in., wpr. 4¢; 1312 to 1320 in., wpr. 4¢; 1322 to 1330 in., wpr. 4¢; 1332 to 1340 in., wpr. 4¢; 1342 to 1350 in., wpr. 4¢; 1352 to 1360 in., wpr. 4¢; 1362 to 1370 in., wpr. 4¢; 1372 to 1380 in., wpr. 4¢; 1382 to 1390 in., wpr. 4¢; 1392 to 1400 in., wpr. 4¢; 1402 to 1410 in., wpr. 4¢; 1412 to 1420 in., wpr. 4¢; 1422 to 1430 in., wpr. 4¢; 1432 to 1440 in., wpr. 4¢; 1442 to 1450 in., wpr. 4¢; 1452 to 1460 in., wpr. 4¢; 1462 to 1470 in., wpr. 4¢; 1472 to 1480 in., wpr. 4¢; 1482 to 1490 in., wpr. 4¢; 1492 to 1500 in., wpr. 4¢; 1502 to 1510 in., wpr. 4¢; 1512 to 1520 in., wpr. 4¢; 1522 to 1530 in., wpr. 4¢; 1532 to 1540 in., wpr. 4¢; 1542 to 1550 in., wpr. 4¢; 1552 to 1560 in., wpr. 4¢; 1562 to 1570 in., wpr. 4¢; 1572 to 1580 in., wpr. 4¢; 1582 to 1590 in., wpr. 4¢; 1592 to 1600 in., wpr. 4¢; 1602 to 1610 in., wpr. 4¢; 1612 to 1620 in., wpr. 4¢; 1622 to 1630 in., wpr. 4¢; 1632 to 1640 in., wpr. 4¢; 1642 to 1650 in., wpr. 4¢; 1652 to 1660 in., wpr. 4¢; 1662 to 1670 in., wpr. 4¢; 1672 to 1680 in., wpr. 4¢; 1682 to 1690 in., wpr. 4¢; 1692 to 1700 in., wpr. 4¢; 1702 to 1710 in., wpr. 4¢; 1712 to 1720 in., wpr. 4¢; 1722 to 1730 in., wpr. 4¢; 1732 to 1740 in., wpr. 4¢; 1742 to 1750 in., wpr. 4¢; 1752 to 1760 in., wpr. 4¢; 1762 to 1770 in., wpr. 4¢; 1772 to 1780 in., wpr. 4¢; 1782 to 1790 in., wpr. 4¢; 1792 to 1800 in., wpr. 4¢; 1802 to 1810 in., wpr. 4¢; 1812 to 1820 in., wpr. 4¢; 1822 to 1830 in., wpr. 4¢; 1832 to 1840 in., wpr. 4¢; 1842 to 1850 in., wpr. 4¢; 1852 to 1860 in., wpr. 4¢; 1862 to 1870 in., wpr. 4¢; 1872 to 1880 in., wpr. 4¢; 1882 to 1890 in., wpr. 4¢; 1892 to 1900 in., wpr. 4¢; 1902 to 1910 in., wpr. 4¢; 1912 to 1920 in., wpr. 4¢; 1922 to 1930 in., wpr. 4¢; 1932 to 1940 in., wpr. 4¢; 1942 to 1950 in., wpr. 4¢; 1952 to 1960 in., wpr. 4¢; 1962 to 1970 in., wpr. 4¢; 1972 to 1980 in., wpr. 4¢; 1982 to 1990 in., wpr. 4¢; 1992 to 2000 in., wpr. 4¢; 2002 to 2010 in., wpr. 4¢; 2012 to 2020 in., wpr. 4¢; 2022 to 2030 in., wpr. 4¢; 2032 to 2040 in., wpr. 4¢; 2042 to 2050 in., wpr. 4¢; 2052 to 2060 in., wpr. 4¢; 2062 to 2070 in., wpr. 4¢; 2072 to 2080 in., wpr. 4¢; 2082 to 2090 in., wpr. 4¢; 2092 to 2100 in., wpr. 4¢; 2102 to 2110 in., wpr. 4¢; 2112 to 2120 in., wpr. 4¢; 2122 to 2130 in., wpr. 4¢; 2132 to 2140 in., wpr. 4¢; 2142 to 2150 in., wpr. 4¢; 2152 to 2160 in., wpr. 4¢; 2162 to 2170 in., wpr. 4¢; 2172 to 2180 in., wpr. 4¢; 2182 to 2190 in., wpr. 4¢; 2192 to 2200 in., wpr. 4¢; 2202 to 2210 in., wpr. 4¢; 2212 to 2220 in., wpr. 4¢; 2222 to 2230 in., wpr. 4¢; 2232 to 2240 in., wpr. 4¢; 2242 to 2250 in., wpr. 4¢; 2252 to 2260 in., wpr. 4¢; 2262 to 2270 in., wpr. 4¢; 2272 to 2280 in., wpr. 4¢; 2282 to 2290 in., wpr. 4¢; 2292 to 2300 in., wpr. 4¢; 2302 to 2310 in., wpr. 4¢; 2312 to 2320 in., wpr. 4¢; 2322 to 2330 in., wpr. 4¢; 2332 to 2340 in., wpr. 4¢; 2342 to 2350 in., wpr. 4¢; 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Presses—**Fruit and Jelly—**

Enterprise Mfg. Co.	20x10@30c
Henis	doz \$3.50
Shepard's Queen City	doz \$2.75
Silver & Co.	doz \$2.75

Pruning Hooks and Shears—See Shears.**Pullers, Nail—**

Scranton	doz, \$18.00, 33¢
Curtis Hammer	doz, \$9.00
Giant, No. 1	doz, \$18.00, 10¢
Giant, No. 2	doz, \$15.00, 10¢
Pelican	doz, \$9.00, 25¢
Eclipse	Each, \$2.00, net
Economy	doz, \$6.00

Pulleys—

Hot House, Awning, &c.	60x10¢
Japanned Screw	60x10¢
Brass Screw	60x10¢
Japanned Slide	60x10¢
Japanned Clothes Line	60x10¢
Empire Sash Pulley	55x60¢
Moore's Sash, Anti-Friction	50x50¢
Hay Fork, Solid Eye	\$4.00, 50x10¢
Hay Fork, "Anti-Friction" 5 in. solid	\$5.70, 50x10¢
Hay Fork, "F" Common and Patent	50x10¢
Hay Fork, Tarbox Pat. Iron	20x10¢
Hay Fork, Reed's Self-Lubricating	60x10¢
Shade Rack	45x10¢
Tackle Blocks—See Blocks.	
Moore's Anti-Friction 5 in. Wheel	doz, \$12.00, 40x10¢

Pumps—

Cistern, Best Makers	60x60x10¢
Pitcher Spout, Best Makers	47x60x10¢
Pitcher Spout, Cheaper G'ds.	75x60x10¢

Punches—

Saddler's or Drive, good	doz, 60x65¢
Bemis & Call Co.'s Springfield Socket	50x55¢
Spring, good quality	doz, \$2.50, 50x55¢
Spring, Leach's Pat.	15x10¢
Bemis & Call Co.'s Spring and Check	40x10¢
Solid Tinner's, P. S. & W. Co.	doz, \$1.44, 50x55¢
Tinner's Hollow Punches, P. S. & W. Co.	20x22¢
Rice Hand Punches	15x10¢
Avery's Revolving	40x10¢
Avery's Sawset and Punch—See Sawsets.	

Rail—

Sliding Door, Wrt. Brass	doz, 35¢, 15¢
Sliding Door, Bronzed Wrt. Iron	doz, 7¢, 7¢
Sliding Door, Iron, Painted	doz, 4¢, 40¢
Barn Door, Light, In. 1/2	3¢
Per 100 feet	\$2.00, 2.50, 3.10, 10¢
B. D. for N. E. Hand	
Small, Med. Large	
Per 100 feet	\$3.15, 2.70, 3.25, Net
Terry's Steel Rail	doz, 44¢
Victor Track Rail, 7¢	doz, 50x22¢
Carrier, double braced, Steel Rail	doz, 44¢
Moore's Wrought Iron	40x10¢
Moody Steel Rail	45x10¢

Rakes—

Cast Steel, Association goods	60x70¢
Cast Steel, outside g'ds.	60x10¢, 70x5¢
Malleable	70x70x5¢
Gibbs Lawn Rake	doz, \$4.90
Canton Lawn Rake	doz, \$3.75
Favorite Lawn Rake	doz, \$4.40
Fort Madison Prize Bow Brace and	
Peerless	65¢
Fort Madison Steel Tooth Lawn Rake	\$6.00, 25¢

Razors—

J. R. Torrey Razor Co. 20¢
 Wostenholm and Butcher, \$10 to £1.10
 Jordan's A.A.A., new list. 10¢
 Net Jordan's Old Faithful, new list. Net
 Galvanic. doz, \$15.00
 Electric Cutlery Co. Net

Razor Strops—

See Strops, Razor.

Rings and Ringers—**Bull Rings—**

Union Nut Co.	55¢
Sargent's	60x10¢, 70x5¢
Hotchkiss' low list	30¢
Humason, Beckley & Co.	70x10¢
Peck, Stow & W. Co.	50x10¢, 50x10¢
Elrich Hdq. Co., White Metal, low list	50x50x10¢

Hog—

Top of the Hill Ringers	doz \$2.00
Top of the Hill Ringers	doz \$1.25
Hill's Improved Ringers	doz \$1.25
Hill's Old Style Ringers	doz \$1.25
Hill's Tongs	doz \$3.00
Hill's Rings	doz \$3.00
Perfect Rings	doz \$1.50
Perfect Ringers	doz \$2.25
Blair's Hog Ringers	doz \$2.00
Blair's Hog Ringers	doz \$2.00
Champion Ringers	doz \$2.00
Champion Ringers, Double	doz \$2.25
Brown's Ringers	doz \$2.00
Brown's Ringers	doz \$1.50
Electric Hog Ringers	doz \$1.50
Electric Hog Ringers	doz \$2.00
Major Ringers	doz \$1.25
Major Ringers	doz \$2.00

Rivets and Burrs—

Iron, list Nov. 17, '87	40¢
Copper	60x10¢
Coppered Iron, Bettina Brand	40¢

Rivet Sets—See Sets.**Rods—**

Stair, Brass	25x21¢
Stair, Black Walnut	doz 40¢

Rollers—

Barn Door, Sargent's list	60x10¢, 10¢
Acme Moore's Anti-Friction	55¢
Union Barn Door Roller	70¢
Thompson Mfg. Co.'s Lawn Rollers	30¢

Rope—

Manilla, 7-16 in. diam. and larger	12¢
Manilla, 1/4 in.	12¢
Manilla, 1/2 and 5-16 in.	13¢
Manilla, Tarred Rope	11¢
Manilla, Hay Rope	12¢
Sisal, 7-16 in. and larger	10¢
Sisal, 1/4 in.	10¢
Sisal, 1/2 and 5-16 in.	11¢
Sisal, Hay Rope	10¢
Sisal, Tarred Rope	9¢
Sisal, Medium Lath Yarn	9¢
New Zealand, 7-16 in. and larger	9¢
New Zealand, 1/4 in.	9¢
New Zealand, 1/2 and 5-16 in.	9¢
New Zealand, Hay Rope	8¢
New Zealand, Tarred Rope	8¢

Note.—Manufacturers' prices on above 1¢ less, f.o.b. factory—less 1 1/2¢ for cash.

Cotton Rope. 13¢, 16¢
 Jute Rope. 6¢, 7¢

Wire—

List February, 1892.
 All kinds. 45¢

Rules—

Boxwood	80x10¢, 10¢
Ivory	50x50x10¢
Starrett's Rules and Straight Edges	35x10¢
Steel	35x10¢

Sad Irons—See Irons, Sad.**Sand and Emery Paper and Cloth—**

See Paper and Cloth.

Sash Cord—See Cord, Sash.**Sash Locks—See Locks, Sash.****Sash Weights—**

See Weights, Sash.

Sausage Stuffers or Fillers—See Stuffers or Fillers, Sausage.**Saws—The following prices are**

often cut by jobbers.

Disston's Circular	45¢, 45x5¢
Disston's Cross Cut	45¢, 45x5¢
Disston's Hand	25¢
Woodrough & McParlin	
Hand, Panel and Rip	30¢, 30x5¢
Narrow Champion Cross Cuts with	
Handles, 1/2 foot	18¢, 20¢
Champion Thin Back Cross Cuts, 1/2	
foot	26¢, 28¢
Champion Extra Thin Back Cross	
Cuts, 1/2 foot	28¢, 31¢
One Man Champion Cross Cuts, 1/2	
foot	37¢, 40¢
Wheeler, Madden & Clemson Mfg. Co.	
Hand, Panel and Rip	35¢, 35x5¢
Narrow Champion Cross Cuts with	
Handles, 1/2 foot	18¢, 20¢
Champion Thin Back Cross Cuts, 1/2	
foot	26¢, 28¢
Champion Extra Thin Back Cross	
Cuts, 1/2 foot	28¢, 31¢
One Man Champion Cross Cuts, 1/2	
foot	37¢, 40¢
Atkins' Circular Shingle & Heading	50¢
Atkins' Silver Steel Diamond X Cuts	doz 70¢
Atkins' Special Steel Dexter X Cuts	doz 50¢
Atkins' Special Steel Diamond X Cuts	doz 32¢
Atkins' Champion and Electric Tooth	
X cuts	doz 30¢
Atkins' Hollow Back X Cuts	doz 30¢
Atkins' Mulay, Mill and Drag	40¢
Atkins' One-Man Saw, with handles	doz 40¢
Peace Circular and Mill	45¢, 45x5¢
Peace Hand Panel and Rip	25¢, 25x5¢
Peace Cross Cuts	45¢, 45x5¢
Richardson's Circular and Mill	45¢, 45x5¢
Richardson's X Cuts	45¢, 45x5¢
Richardson's Hand, &c.	25¢, 25x5¢
C. E. Jennings & Co. Hand, Panel	
and Rip	25¢, 25x5¢

Hack Saws—

Griffin's, complete	40x10¢, 50¢
Griffin's Hack Saw Blades	40x10¢, 50¢
Star Hack Saws and Blades	25¢
Eureka and Crescent	25¢

Scroll—

Lester, complete	\$10.00, 25¢
Rogers, complete	\$4.00, 25¢
Barnes' Builders' and Cab Makers'	\$15.25¢
Barnes' Scroll Saw Blades	35¢

Saw Frames—

See Frames, Saw.

Saw Sets—See Sets, Saw.**Saw Tools—See Tools, Saw.****Scales—**

Hatch, Counter, No. 171, good quality	doz \$21.00
Hatch, Tea, No. 161	doz \$8.75, 87¢
Union Platform, Plain	\$2.10, 2.20
Union Platform, Striped	\$2.40, 2.50
Chatillon's Grocers' Trip Scales	50¢
Chatillon's Eureka	25¢
Chatillon's Favorite	40¢
Family Turnbuckle	30¢, 30x10¢
Richie Bros' Platform	40¢

Scale Beams—

See Beams, Scale.

Scissors, Fluting—

45¢

Scrapers—

Adjustable Box Scraper (S. R. & L. Co.)	\$0.50, 30x10¢
Box, 1 Handle	doz \$4.00, 10¢
Box, 2 Handle	doz \$6.00, 10¢
Defiance Box and Ship	20x10¢
Foot, Common	50x10¢, 80¢
Ship, R. I. Tool Co.	doz \$3.50, net

Screen Window and Door

Frames—See Frames.

Screw Drivers—

See Drivers, Screw.

Screws—**Bench and Hand—**

Bench, Iron	55¢, 10¢, 55¢, 10¢, 10¢
Bench, Wood, Beech	doz \$2.25
Bench, Wood, Hickory	20x10¢
Hand, Wood	25¢, 10¢, 25¢, 10¢, 5¢
Hand, Grand Rapids, list	35¢
Lag, Blunt Point, list Jan. 1, 1890	75¢, 10¢
Couch and Lag, Gimlet Point, list Jan. 1, 1890	75¢, 10¢
Bed	25¢, 5¢
Hand Rail, Sargent's	60¢, 10¢
Hand Rail, H. & F. Mfg. Co.	70¢, 10¢, 75¢
Hand Rail, Am. Screw Co.	75¢
Jack Screws, Millers Falls list	50¢, 50¢, 5¢
Jack Screws, P. S. & W.	35¢
Jack Screws, Sargent	60¢, 10¢, 60¢, 10¢, 5¢
Jack Screws, Stearns	40¢, 40¢, 10¢

Cork—

Humason & Beckley Mfg. Co.	40¢, 10¢, 50¢
Williamson's	33¢, 33¢, 5¢
Howe Bros. & Hulbert	35¢

Machine—

Flat Head Iron	55¢
Round Head Iron	50¢

Wood—

List January 1, 1891.	
Flat Head Iron	70¢
Round Head Iron	65¢
Flat Head Brass	70¢
Round Head Brass	65¢
Flat Head Bronze	70¢
Round Head, Bronze	65¢
Rogers' Drive Screws	82¢

Scroll Saws—See Saws, Scroll.**Scythes—**

Grain	40¢, 50¢, 40¢, 10¢
Grass	40¢, 10¢, 50¢

Scythe Snaths—

See Snaths, Scythe.

Sets—**Awl and Tool—**

Aiken's Sets, Awls and Tools	
No. 20, 1/2 doz \$10.00	55¢, 10¢
Frays Adj. Tool Hdl.	10¢
3, 1 1/2, 4, 80	10¢
Millers Falls Adj. Tool Hdl.	45¢
Nos. 1, 1 1/2, 2, 18	25¢
Henry's Combination Haft	doz \$6.50
Stanley's Excelsior	
No. 1, 7/8, 1 1/2, No. 2, 1 1/2, No. 3, 1 1/2	30x10¢
Common Brad Sets	
No. 42, \$10.50; No. 43, \$12.50	70x10¢, 5¢

Nail—

Square	gr. \$4.00, \$4.25
Round	gr. \$3.25
Buck Bros	27¢, 10¢
Cannon's Diamond Point	gr. \$12, 20¢

Rivet—

Regular list. 50¢, 10¢

Saw—

Stillman's Genuine	doz \$5.00, 7.75, 40x5¢
Stillman's Pattern, Hand	doz \$3.25, 40x5¢
Cross Cut, \$5.25	45¢, 50¢
Common Lever	doz \$2.00, 45¢, 50¢
Morrill's No. 1, \$12.00	40¢, 40x5¢
No. 11, \$15.00	40¢, 10¢, 40x20¢
Nos. 3 and 4, \$18.00	40x5¢
No. 5, \$24.00	40x5¢
Leach's, No. 9, \$8.00; No. 1, \$15.00	15¢, 20¢
Nash's	20x10¢, 20x10¢, 10¢
Hammer, Hotchkiss	\$5.50, 10¢
Hammer, Bemis & Call Co.'s new Pat.	30x5¢
Bemis & Call Co.'s Lever and Spring	30x5¢
Bemis & Call Co.'s Plate	10¢
Bemis & Call Co.'s Cross Cut	12¢
Aiken's Genuine	\$13.00, 50¢, 10¢, 60¢
Aiken's Imitation	\$7.00, 55¢, 5¢
Hart's Pat. Lever	20¢
Disston's Star	25¢
Leopold	40¢, 10¢, 50¢
Aiken's Lever	doz \$1.40, 10¢
Atkin's Criterion	doz \$1.40, 10¢
Croissant (Keller), No. 1, \$15.00; No. 2, \$24.00	40x10¢
Avery's Saw Set and Punch	50¢
Chieftain Co.'s Superior	doz \$7.00
Chieftain Co.'s Royal	doz \$7.50
Crescent	doz \$5.00
Lloyd's Acme	doz \$15, 40x10¢

Sharpeners, Knife—

Larkins'	
Applewood Handles	doz \$8.00, 40¢
Rosewood or Cocobola	doz \$9.00, 40¢

Shaves, Spoke—

Iron	45¢
Wood	30¢
Bailey's (Stanley R. & L. Co.)	40x10¢
Stearns	30x10¢
Cincinnati	25x10¢
Goodell's 1/2 doz	\$8.00, 25¢

Shears—

American (Cast) Iron	75¢, 10¢, 75¢, 10¢, 5¢
Barnard's Lamp Trimmers	doz. \$3.75
Tinner's	20x22¢
Seymour's, List Dec. 1881	60x10¢, 10¢, 60x10¢, 10¢, 5¢
Heinrich's, List Dec. 1881	60x10¢, 10¢, 60x10¢, 10¢, 5¢
Heinrich's Tailor's Shears	53x5¢
Best Steel Trimmers:	
First quality	80¢, 80x10¢
Second quality	80¢, 10¢, 80x10¢, 10¢
Acme Cast Shears	10x10¢
Diamond Cast Shears	10x10¢
Clipper	10x10¢
Victor Cast Shears	75¢, 10¢, 75¢, 10¢, 5¢
Howe Bros. & Hulbert, Solid Forged	40¢
Chicago Drop Forge & F. Co., Solid	
Steel Forged	60¢
Wentport Cutlery Co.	60¢, 60x10¢
Klaus Shear Co., Japaned	70¢
Klaus Shear Co., Japaned	same list, 60¢
Galvanic 3/4 to 9 in., doz.	\$1.00 to \$1.50
Electric Utility	Net

Snaps, Harness, &c.

Anchor (T. & S. Mfg. Co.)	65¢
Fitch's (Bristol)	50¢10¢
Hotchkiss	50¢
Andrews	50¢
Sargent's Patent Guarded	70¢10¢10¢
German, new list	40¢10¢
Covert	50¢10¢5¢2¢
Covert, New Patent	50¢10¢5¢2¢
Covert, New R. E.	50¢10¢5¢2¢
Covered Spring	60¢10¢10¢
E. Covert's Triumph	35¢

Snaths, Scythe

List	50¢50¢5¢
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Soldering Irons

See Irons, Soldering.

Spittoons, Cuspidors, &c.**Standard Fiberware**

Cuspidors, 8½-inch, ½ doz., No. 5, 88; No. 5X, 89	
Spittoons, Daisy, 8-inch, No. 1, 84; 10 and 11 inch, 86	

Spoke Shaves

See Shaves, Spoke.

Spoke Trimmers

See Trimmers, Spoke.

Spoons and Forks**Tinned Iron**

Basting, Cen. Stamp, Co.'s list	70¢10¢
Solid Table and Tea, Cen. Stamp, Co.'s list	70¢10¢
Buffalo, S. S. & Co.	35¢5¢2¢

Silver Plated

4 months or 5¢ cash 30 days:	
Meriden Brit. Co., Rogers	40¢15¢
C. Rogers & Bros.	40¢15¢
Rogers & Bros.	40¢15¢
Reed & Barton	40¢10¢5¢
Wm. Rogers Mfg. Co.	40, 15¢5¢
Simpson, Hall, Miller & Co.	40, 15¢5¢
Holmes & Edwards Silver Co.	40, 15¢5¢
L. Boardman & Son	50¢12¢5¢

Miscellaneous

Holmes & Edwards Silver Co.	
No. 47 Mexican Silver	50¢10¢5¢
No. 30 Silver Metal	50¢10¢5¢
No. 24 German Silver	50¢10¢5¢
No. 50 Nickel Silver	50¢5¢
No. 49 Nickel Silver	50¢10¢5¢
Wm. Rogers Mfg. Co.	
Rogers' Silver Metal	50¢10¢0¢
18½ Rogers' German Silver	60¢0¢
22½ Rogers' Nickel Silver	50¢0¢
German Silver	50¢5¢10¢5¢
German Silver, Hall & Elton	50¢5¢ cash
Nickel Silver	50¢5¢50¢10¢5¢ cash
Britannia	60¢0¢5¢
Boardman's Nickel Silver, list July 1, 1891	60¢7¢5¢
Boardman's Britannia Spoons, case lots	60¢5¢ cash

Springs**Door**

Torrey's Rod, 39 in.	½ doz \$1.20@1.25
Gray's, ½ gr. \$20.00	25¢
Bee Rod, ½ gr., \$20.00	20¢25¢
Warner's No. 1, ½ doz \$2.50; No. 2, \$3.30	
Gem (Coll), list April 19, 1886	10¢15¢
Star (Coll), list April 19, 1886	20¢20¢5¢
Victor (Coll)	60¢10¢00¢10¢5¢
Champion (Coll)	60¢10¢00¢10¢10¢
Cowell's, No. 1, ½ doz \$18.00; No. 2, \$15.00	
Rubber, complete, ½ doz \$4.50	55¢10¢
Hercules	50¢50¢10¢

Carriage, Wagon, &c.

Elliptic, Concord, Platform and Half	
Scroll	60¢10¢10¢
Cliff's Bolster Springs	25¢

Squares

Steel and Iron	80¢10¢80¢10¢10¢
Nickel-Plated	25¢
Try Square and T Bevels	60¢10¢10¢
Diston's Try Square and T Bevels	50¢
Winterbottom's Try and Miter	30¢10¢
Starrett's Micrometer Caliper Squares	25¢

Avery's Flush Bevel Squares	40¢
Avery's Bevel Protractor	50¢

Squeezers**Fodder**

Blair's	½ doz \$2.00
Blair's "Climax"	½ doz \$1.25

Lemon

Porcelain Lined, No. 1	½ doz \$6.00
Wood, No. 2	½ doz \$3.00, 35¢
Wood, Common	½ doz \$1.70@1.75
Dunlap's Improved	½ doz \$3.75, 20¢
Sammis, No. 1, \$5.00; No. 2, \$9; 12	
Jennings' Star	½ doz \$2.50
The Boss	½ doz \$2.50
Dean's, Nos. 1, ½ doz \$0.50; 2, \$3.35; 3, \$1.90; 4, \$2.50	
Little Giant	50¢50¢5¢
King	40¢5¢
Hotchkiss Straight Flash	½ doz \$12.00
Silver & Co., Glass	½ gro. \$9.00
Manny Lemon Juice Extractor	
Standard	½ doz \$0.75@1.00
Improved	½ doz \$0.75@1.00

Standard Fiber Ware

See Ware, Standard Fiber.

Staples**Blind**

Barbed, ½ in. and larger	½ doz 7¢7¢4¢
Barbed, ¾ in.	½ doz 8¢8¢1¢
Fence Staples, Galvanized	Same price
Fence Staples, Plain	Same price
Fence Staples, Galv.	See Trd. Rep

Steelyards**Stocks and Dies**

Blacksmith's:	
Waterford Goods	35¢
Butterfield's Goods	35¢
Lighting Screw Plate	35¢30¢
Reece's New Screw Plates	35¢30¢
Reversible Ratchet	30¢
Gardner	25¢

Stops, Bench

Morrill's	½ doz \$9, 50¢
Hotchkiss's	½ doz \$5, 10¢10¢10¢
Weston's, No. 1, \$10; No. 2, \$9, 25¢10¢5¢	
McGill's, ½ doz \$3	10¢
Cincinnati	25¢10¢
Terrell's Nos. 1 and 2, ½ doz, \$3; No. 3, \$3.60	30¢

Stone**Sythe Stones**

Pike Mfg. Co., list April, 1892	33¢5¢
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Oil Stones, &c.

Pike Mfg. Co.	Price ½ doz
Hindustan No. 1	8¢
Sand Stone	5¢
Washita Stone, Extra	50¢
Washita Stone, No. 1	40¢
Washita Stone, No. 2	30¢
Washita Slips, Extra	80¢
Washita Slips, No. 1	70¢
Arkansas Stone, No. 1, 3 to 5 ½ in.	\$2.80
Arkansas Stone, No. 1 ½ to 8 in.	\$3.50
Turkey Oil Stone, 4 to 8 in.	80¢
Turkey Slips	\$2.00
Lake Superior, Chase	½ doz 13¢
Lake Superior Slips, Chase	½ doz 20¢

Stove Polish

See Polish, Stove.

Stretchers, Carpet

Cast Steel, Polished	½ doz \$2.25
Cast Iron, Steel Points	½ doz \$1.75
Socket	½ doz \$1.75
Bullard's	25¢25¢10¢

Strops, Razor

Genuine Emerson	60¢60¢5¢
Imitation	½ doz \$2.00, 20¢10¢5¢
Torrey's	50¢50¢50¢10¢
Badger's Belt and Com.	½ doz \$2.00
Lamont Combination	½ doz \$4.00
Jordan's Pat. Padded, list Nov. 1, '89, 50¢	
Electric Cutlery Co.	Net

Stuffers or Fillers,**Sausage**

Miles' Challenge, ½ doz \$20	50¢50¢50¢
Perry, ½ doz, No. 1, \$15.00; No. 0, \$21.00	
Draw Cut No. 1, each \$30.00	20¢
Enterprise Mfg. Co.	20¢10¢30¢
Silver's	40¢10¢

Sweepers, Carpet and Lawn

Bissell No. 5	½ doz \$17.00
Bissell No. 8	½ doz \$20.00
Bissell, Grand	½ doz \$30.00
Standard	½ doz \$24.00
Domestic	½ doz \$22.00
Grand Rapids	½ doz \$22.00
Crown Jewel, No. 1, \$18.00; No. 2, \$19.00; No. 3, \$20.00	
Magic	½ doz \$15.00
Improved Parlor Queen	
Nickel	½ doz \$27.00
Japanned	½ doz \$24.00
Excelsior	½ doz \$22.00
Garland	½ doz \$18.00
Parlor Queen	½ doz \$24.00
Housewife's Delight	½ doz \$15.00
Queen	½ doz \$21.00
Queen, with band	½ doz \$18.00
King	½ doz \$30.00
Weed, Improved	½ doz \$18.00
Hub	½ doz \$16.00
Cog-Wheel	½ doz \$16.00
Easy	½ doz \$22.00
Monarch	½ doz \$22.00
Goshen	½ doz \$21.00
Ladies' Friend	½ doz \$15.00
Advance	½ doz \$18.00
Supreme	½ doz \$22.00

Lawn

Thompson Mfg. Co.	30¢
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Tacks, Brads, &c.

List October 19, 1890. Old established straight weights. Short weight goods are sold at lower prices.

Carpet Tacks	
American, Blued	60¢5¢
American, Tin'd and Cop'd	70¢
Steel, Bright and Blued	60¢5¢
Steel, Tinned and Coppered	70¢
Swedes Iron, Blued	72¢
Swedes Iron, Tinned	75¢
American Iron Tacks	60¢5¢
S. S., Blued	60¢5¢
S. S., Tinned	70¢
Lanc., Blued	55¢
Lanc., Tinned	60¢
Gimp and Lace Tacks	
S. S., Blued	62¢5¢
S. S., Tinned	69¢5¢
Lanc., Blued	55¢
Lanc., Tinned	60¢
Basket and Trimmers' Tacks	
Lanc.	52¢5¢
S. S.	60¢
Hungarian Nails	60¢
Common and Patent Brads	50¢
Leathered Tacks	55¢
Brush Tacks	60¢
Looking Glass Tacks	35¢
Picture-Frame Points	35¢
Finishing Nails	60¢
Trunk and Clout Nails	
Black	62¢5¢
Tinned or Coppered	63¢5¢
Basket Nails	60¢
Chair Nails	52¢5¢
Cigar Box Nails	45¢
Tin Capped Nails	50¢

Miscellaneous

Double Point	90¢90¢10¢
Wire Carpet Nails	50¢10¢
Plymouth Rock Steel Carpet Tacks	25¢

Wire Brads and Nails

Steel-Wire Brads, R. & E. Mfg. Co.'s list	50¢10¢
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See also Nails, Wire.

Tapes, Measuring

American	40¢40¢5¢
Spring	40¢
Chesterman's, Regular list	25¢30¢

Thermometers

Tin Case	80¢80¢10¢
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Thimble Skeins—See Skeins.**Ties, Bale—Steel.**

Standard Wire, list	50¢10¢5¢
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Tinners' Shears, &c

See Shears, Tinners' &c.

Tinware

Stamped, Japanned and Plated, list Jan 20, 1887	70¢10¢70¢25¢
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Tire Benders, Upsetters, &c.—See Benders and Upsetters, Tire.**Tools**

Bradley's	20¢
Barton's	20¢20¢5¢
L. & J. J. White	20¢5¢
Albertson Mfg. Co.	20¢5¢
Beatty's	30¢
Sandusky Tool Co.	30¢30¢5¢
Shaves Cincinnati Tool Co.	20¢

Lumber

Ring Peavies, "Blue Line"	½ doz \$20.00
Ring Peavies, Common	½ doz \$18.00
Steel Socket Peavies	½ doz \$21.00
Mail, Iron Socket Peavies	½ doz \$19.00
Can Hooks, "Blue Line"	½ doz \$16.00
Can Hooks, Common Finish	½ doz \$14.00
Can Hooks, Mail, Socket Clasp, "Blue Line" Finish	½ doz \$16.00
Can Hooks, Mail, Socket Clasp, Common Finish	½ doz \$14.00
Can Hooks, Clip Clasp, "Blue Line" Finish	½ doz \$14.00
Can Hooks, Clip Clasp, Common Finish	½ doz \$12.00
Hand Spikes	½ doz 8 ft., \$15.00; 8 ft., \$20.00
Pike Poles, Pike & Hook	½ doz, 12 ft., \$11.50; 14 ft., \$12.50; 16 ft., \$14.50; 18 ft., \$17.50; 20 ft., \$21.50
Pike Poles, Pike only	½ doz, 12 ft., \$10.00; 14 ft., \$11.00; 16 ft., \$13.00; 18 ft., \$16.00; 20 ft., \$20.00
Pike Poles, not ironed	½ doz, 12 ft., \$6.00; 14 ft., \$7.00; 16 ft., \$9.00; 18 ft., \$12.00; 20 ft., \$16.00
Setting Poles	½ doz, 12 ft., \$14.00; 14 ft., \$15.00; 16 ft., \$17.00
Swamp Hooks	½ doz \$18.00

Saw

Atkins' Perfection	½ doz \$12.00
Atkins' Excelsior	½ doz \$6.00
Atkins' Giant	½ doz \$4.00

Tobacco Cutters

See Cutters, Tobacco.

Transom Lifters

See Lifters, Transom.

Traps**Game**

Newhouse	40¢40¢5¢
Onaida Pattern	70¢10¢
Game, Blake's Patent	40¢10¢5¢

Mouse and Rat

Mouse Wood, Choker	½ doz holes, 9¢10¢
Mouse, Round Wire	½ doz \$1.50, 15¢
Mouse, Cage, Wire	½ doz \$2.50, 10¢
Mouse, Catch-em-alive	½ doz \$2.50, 15¢
Mouse, Bonanza	½ doz 0.90@1.00
Rat, Decoy	½ gr \$10.00, 10¢
Ideal	½ gr \$10.00
Cyclone	½ gr \$5.25
Hotchkiss Metallic Mouse, 5-hole traps	½ doz, 75¢; in full cases, ½ doz \$0.60@0.65¢
Hotchkiss Imp. Rat Killer	½ gro \$18.50
Hotchkiss New Rat Killer	½ gro \$16.50
Schuyler's Rat Killer	½ gro \$15.00

Triers

Butter and Cheese	25¢
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Trimmers, Spoke

Bonney's	½ doz \$10.00, 50¢
Stearns'	20¢10¢
Ives', No. 1, \$15.00; No. 2, \$12.00 ½ doz.	
Douglas'	½ doz \$9.00, 20¢
Cincinnati	25¢

Trowels

Lethrop's Brick and Plastering	20¢10¢5¢35¢
Reed's Brick and Plastering	25¢25¢5¢
Diston's Brk and Plastering	25¢25¢5¢
Peace's Plastering	25¢25¢5¢
Clement & Maynard's	20¢20¢5¢
Rose's Brick	15¢20¢
Brade's Brick	25¢
Worral's Brick and Plastering	20¢
Cleaves' Angle Trowel, ½ gro, No. 1, \$30; No. 2, \$30; No. 3, \$15. net @ 10¢	

Trucks, Warehouse, &c.

R. & L. Block Co.'s list, '82	40¢
Thompson Mfg. Co.	35¢

Tubes, Boiler

See Pipe.

Twine

Flax Twine	
No. 9, ¼ and ½ b Balls	BC. B.
No. 12, ¼ and ½ b Balls	25¢ 31¢
No. 18, ¼ and ½ b Balls	20¢ 29¢
No. 24, ¼ and ½ b Balls	20¢ 29¢
No. 30, ¼ and ½ b Balls	18¢ 28¢
No. 36, ¼ and ½ b Balls	15¢ 25¢
No. 36, ¼ and ½ b Balls	52¢54¢
Chalk Line, Cotton, ¼ b Balls	25¢
Mason Line, Linen, ¼ b Balls	55¢
2-Ply Hemp, ¼ and ½ b Balls (Spring Twine)	15¢5¢
3-Ply Hemp, 1 b Balls	16¢18¢
3-Ply Hemp, ¼ b Balls	15¢15¢
Cotton Wrapping, 5 Balls to b	15¢16¢
2, 3, 4 and 5 Ply Jute, ¼ b Balls	10¢
Wool	61¢60¢
Paper	13¢14¢
Cotton Mops, 6, 9, 12 and 15 ½ to doz.	18¢

Vises

Solid Box	50¢10¢50
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Washers—	
Size hole.....	5-16 3/4 1/2 3/4 to 1 3/4
Washers.....	0 5 3.50¢ 3
In lots less than 200 lb. per doz., add 1/4¢, 5-b	
boxes 1¢ to list.	
Wedges—	
Iron.....	per lb 3 3/4¢
Steel.....	per lb 3 3/4¢
Weights, Sash—	
Solid Eyes.....	per ton \$18.00 to \$19.00
Well Buckets, Galvanized—See Buckets, Well, Galvanized.	
Wheels, Well—	
8 in., \$2.25; 10 in., \$2.70; 12 in., \$3.25	
Wire and Wire Goods—	
Iron—	
Market,	
Br. & Ann., Nos. 0 to 18.....	75¢ to 80¢
Cop'd, Nos. 0 to 18.....	75¢ to 75¢ to 10¢

Galv., Nos. 0 to 18.....	70¢ to 70¢ to 10¢
Tin'd, Tin'd list, Nos. 0 to 18.....	70¢ to 70¢ to 10¢
Stone,	
Br. and Ann'd, Nos. 16 to 18.....	80¢
Bright and Ann'd, Nos. 19 to 26.....	80¢ to 5¢
Br. and Ann'd, Nos. 27 to 36.....	82 1/2¢ to 5¢
Tinned.....	
Tinned Broom Wire, 18 to 21, per lb.....	44¢
Galvanized Fence, Nos. 8 and 9.....	70¢ to 10¢
Brass, list Jan. 18, 1884.....	25¢ to 33 1/2¢
Copper, list Jan. 18, 1884.....	35¢ to 40¢
Annealed Wire on Spools.....	60¢
Mallin's Steel and Tin'd on Spools.....	60¢
Tate's Spooled, Tin'd & Annealed.....	60¢ to 5¢
Tate's Spooled Cop. and Brass.....	50¢
Cast Steel Wire.....	80¢ to 4¢
Stub's Steel Wire, 12 to 30.....	60¢ to 70¢
Wire Clothes Line, see Lines.	
Wire Picture Cord, see Cord.	
Bright Wire Goods—	
Standard list.....	80¢ to 20¢ to 85¢

Wire Cloth and Netting—	
Painted Screen Cloth, good quality, per	100 sq. ft., \$1.40
Galvanized Wire Netting.....	70¢ to 10¢ to 75¢
Wire, Barb—	
See Trade Report.	
Wire Rope—See Rope, Wire.	
Wrenches—	
American Adjustable.....	40¢
Baxter's Adjustable "S".....	40¢ to 10¢ to 50¢
Baxter's Diagonal.....	40¢ to 10¢ to 50¢
Coe's "Mechanics".....	50¢ to 3¢
Girard Standard.....	65¢ to 10¢
Lamson & Sessions' Engineers.....	60¢ to 10¢
Lamson & Sessions' Standard.....	70¢ to 10¢
P. S. & W. Agricultural.....	75¢ to 10¢
Lamson & Sessions' Agric'l.....	75¢ to 10¢ to 10¢
Bemis & Call's:	
Pat. Combination.....	35¢
Merrick's Pattern.....	35¢
Brigg's Pattern.....	25¢
Cylinder or Gas Pipe.....	40¢ to 5¢
No. 3 Pipe.....	40¢ to 10¢

Alken's Pocket (Bright).....	\$6.00, 50¢ to 10¢
The Favorite Pocket.....	per doz., \$4.00, 40¢
Webster's Pat. Combination.....	25¢
Boardman's.....	20¢ to 10¢
Always Ready.....	50¢
Donohue's Engineer.....	20¢ to 10¢
Acme, Bright.....	50¢ to 2¢
Acme, Nicked.....	40¢ to 2¢
Hercules.....	70¢ to 10¢ to 5¢
Walker's.....	55¢ to 3¢
Diamond Steel.....	55¢ to 3¢
Cincinnati Brace Wrenches.....	25¢ to 10¢
Taft's Vise Wrench.....	55¢ to 10¢ to 3¢
Wringers, Clothes—	
Am. Wringer Co.'s list, July 1, '92.....	2¢ cash
Colby Wringer Co.'s list, Sept. 1, '91.....	2¢ cash
Lovell Mfg. Co., list Jan. 1, 1892.....	2¢ cash
Peerless Mfg. Co., list Feb., 1892.....	2¢ cash
Wrought Goods—	
Staples, Hooks, &c., list March 17, 1892.....	80¢ to 25¢

Paints, Oils and Colors.—Wholesale Prices.

Animal and Vegetable Oils—	
Linseed, City, raw, per gal.....	40
Linseed, City, boiled.....	43
Linseed, Western, raw.....	38
Lard, City, Extra Winter.....	63
Lard, City, Prime.....	62 1/2
Lard, City, Extra No. 1.....	50
Lard, City, No. 1.....	40
Lard, Western, prime.....	62
Cotton-seed, Crude, prime.....	28
Cotton-seed, Crude, off grades.....	26
Cotton-seed, Summer Yellow, prime.....	31 1/2
Cotton-seed, Summer Yellow, off grades.....	30
Sperm, Crude.....	68
Sperm, Natural Spring.....	67
Sperm, Bleached Spring.....	72
Sperm, Natural Winter.....	73
Sperm, Bleached Winter.....	78
Whale, Crude.....	45
Whale, Natural Winter.....	58
Whale, Bleached Winter.....	59
Whale, Extra Bleached.....	59
Sea Elephant, Bleached Winter.....	62
Menhaden, Crude, Sound.....	30
Menhaden, Crude, Southern.....	37
Menhaden, Light Pressed.....	38
Menhaden, Bleached W'ter.....	40
Menhaden, Extra Bleached.....	44
Tallow, City, prime.....	44
Tallow, Western, prime.....	42 1/2
Cocoanut, Ceylon.....	5
Cocoanut, Cochiti.....	5 1/2
Cod, Domestic.....	38
Cod, Foreign.....	42
Red Elaine.....	34
Red Saponified.....	44
Bank.....	35
Strait.....	30
Olive, Italian, bbls.....	58
Neatsfoot, prime.....	50
Palm, prime, Lakos.....	54
Mineral Oils—	
Black, 29 gravity, 25 to 30 cold test.....	7
Black, 29 gravity, 15 cold test.....	7 1/2
Black, 29 gravity, summer.....	6
Cylinder, light, filtered.....	14

Cylinder, dark, filtered.....	10
Paraffine, 23 1/2 to 24 gravity.....	11 1/2
Paraffine, 25 gravity.....	10 1/2
Paraffine, 28 gravity.....	8
Paraffine, red.....	9
Paints and Colors—	
Barytes, Foreign, 10 ton.....	\$22.00
Barytes, Amer. floated.....	29.00
Barytes, Amer. No. 1.....	15.00
Barytes, Amer. No. 2.....	13.00
Barytes, Amer. No. 3.....	11.00
Blue, Celestial.....	40
Blue, Chinese.....	40
Blue, Prussian.....	25
Blue, Ultramarine.....	8
Brown, Spanish.....	1
Brown, Vandyke, Amer.....	3
Brown, Vandyke, English.....	6
Carmine, No. 40, in bulk.....	3.10
Carmine, No. 40, in boxes or barrels.....	3.20
Carmine, No. 40, in ounce bottles.....	4.20
Chalk, in bulk.....	2.00
Chalk, in bbls., per 100 lb.....	33
China Clay, English.....	13.00
Cobalt Oxide, prep'd.....	9.00
Cobalt Oxide, black.....	100 lb, 2.50
Cobalt Oxide, black.....	less 100 lb, 2.05
Green, Paris, 170 to 175 lb.....	13
Green, Paris, 170 to 175 lb.....	14
Green, Paris, small pack.....	15 1/2
Green, Chrome, ordinary.....	6
Green, Chrome, pure.....	22
Lead, Eng., B.B. white.....	8 1/2
Lead, Ann. White, dry or in oil.....	7 1/2
Kegs, lots less than 500 lb.....	6 1/2
Kegs, lots 500 lb to 5 tons.....	6 1/2
Kegs, lots 5 tons to 12 tons.....	6 1/2
Kegs, lots 12 tons and over.....	6 1/2
Lead, White, in oil, 25 lb tin.....	1
Lead, White, in oil, 12 1/2 lb tin.....	1
Lead, White, in oil, 1 to 5 lb asorted tins, add to keg price.....	6 1/2
Lead, Red, bbls. and 1/2 bbls.....	6 1/2
Lead, Red, kegs.....	6 1/2
Litharge, kegs.....	6 1/2
Litharge, bbls. and 1/2 bbls.....	6 1/2

TERMS, &c.—Lead and Litharge.—On	
lots of 500 lb or over, 60 days' time or 2 1/2	
5 discount, cash if paid within 15 days of date of invoice.	
Ocher, Rochelle.....	1.35
Ocher, French Washed.....	1 1/2
Ocher, German Washed.....	1 1/2
Ocher, American.....	1 1/2
Orange Mineral, English.....	8 1/2
Orange Mineral, German.....	10
Orange Mineral, American.....	8 1/2
Paris White, English Cliff stone.....	1.00
Paris White, American.....	70
Red, Indian, English.....	5 1/2
Red, Indian, American.....	2
Red, Turkey.....	9
Red, Tuscan.....	0
Red, Venetian, American.....	per 100 lb, 1.00
Sienna, Italian, Burnt and Powd., per lb.....	4
Sienna, Ital., Burnt Lumps.....	1 1/2
Sienna, Ital., Raw, Powd.....	4 1/2
Sienna, Ital., Raw, Lumps.....	1 1/2
Sienna, American, Raw.....	1 1/2
Sienna, American, Burnt and Powdered.....	per lb, 1 1/2
Talc, French.....	1 1/2
Talc, American.....	0 1/2
Terra Alba, Fr'ch, per 100 lb.....	75
Terra Alba, English.....	70
Terra Alba, American No. 1.....	70
Terra Alba, American No. 2.....	45
Umber, Turkey, Burnt and Powdered.....	3 1/2
Umber, Turkey, Bnt. Ln.....	2 1/2
Umber, Turkey, Raw and Powdered.....	3 1/2
Umber, Turkey, R/w Lumps.....	2 1/2
Umber, Turkey, R/w Amer.....	1 1/2
Yellow, Chrome.....	10
Vermilion, American Lead.....	11 1/2
Vermilion, Quicks'er, bulk.....	57
Vermilion, Quicks'er, bags.....	58
Vermilion, Quicksilver sm'r pks.....	62
Vermilion, English Import.....	85
Vermilion, Imitation, Eng.....	8
Vermilion, Trieste.....	90
Vermilion, Chinese.....	92 1/2
Whiting Common, per 100 lb.....	37 1/2
Whiting Gilders.....	45

Zinc, American, dry.....	per lb, 4 1/2
Zinc, French, Red Seal.....	7 1/2
Zinc, French, Green Seal.....	0
Zinc, French, V. M. X.....	0
Zinc, Antwerp, Red Seal.....	7 1/2
Zinc, Antwerp, Green Seal.....	7 1/2
Zinc, German, L. Z. O.....	6 1/2
Zinc, V. M. in Poppy Oil, G. Seal, lots of 1 ton and over.....	10 1/2
Zinc, V. M. in Poppy Oil, Red Seal.....	10
lots of 1 ton and over.....	10 1/2
lots of less than 1 ton.....	10 1/2
Discounts.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1¢; 25 bbls., 2¢; 50 bbls., 4¢. No discount allowed on less than bbl. lots.	
Colors in Oil—	
Black, Drop, Frankfort.....	25
Black, Drop, English.....	12
Black, Drop, Domestic.....	7
Black, Lampblack, Best.....	20
Black, Lampblack, Common.....	7
Black, Ivory.....	8
Blue, Chinese.....	35
Blue, Prussian.....	20
Blue, Ultramarine.....	12
Brown, Vandyke.....	8
Green, Chrome.....	8
Green, Paris.....	16
Sienna, Raw.....	7
Sienna, Burnt.....	7
Umber, Raw.....	7
Umber, Burnt.....	7
Putty—	
In barrels and 1/2 bbls.....	.013¢
In tubs.....	.013¢
In tin cans.....	.013¢
In bladders.....	.013¢
Spirits Turpentine—	
In regular bbls.....	28 1/2
In machine bbls.....	29
Glue—	
Low Grade.....	8
Calicut.....	12
Medium White.....	13
Extra White.....	17
French.....	10
English.....	10
Irish.....	12

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